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MAY 1936

# ASTOUNDING

## STORIES

20¢

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Cometeers*  
By  
Jack Williamson



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Number 3

# ASTOUNDING STORIES

MAY  
1936

A STREET & SMITH PUBLICATION

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## Table of Contents

### Feature Story:

- THE COMETEERS (Part 1) . . . Jack Williamson . . . 6  
*The sequel to the "Legion of Space"—with all the aura that surrounded the Purple Hell—in four parts.*

### Novel:

- MATHEMATICA PLUS . . . John Russell Fearn . . . 90  
*The sequel to "Mathematica"—in which equations are created—this time positive balances.*

### Novelette:

- DOOMED BY THE PLANETOID . . . D. D. Sharp . . . 58  
*A fast-moving tale of the spaceways in which adventure plays a part.*

### Short Stories:

- RED STORM ON JUPITER . . . Frank Belknap Long, Jr. . . 32  
*Vivid descriptions of the greatest planet of them all.*  
ELIMINATION . . . Don A. Stuart . . . 45  
*Madness and science walk hand in hand.*  
THE WEAPON . . . Raymond Z. Gallun . . . 79  
*How would a heat ray work? Here's the answer.*  
THE W-62'S LAST FLIGHT . . . Clifton B. Kruse . . . 115  
*The I. S. F. fights a losing fight in the old ship.*

### Serial Novel:

- SPAWN OF ETERNAL THOUGHT . . . Eando Binder . . . 126  
*Ending the epic of an all-absorbing being.*

### Readers' Department:

- BRASS TACKS (The Open House of Controversy) . . . 155  
EDITOR'S PAGE . . . 78

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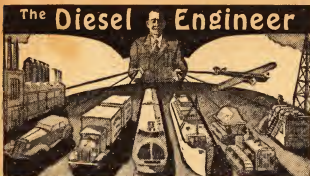
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30x4-20-51	3.85 2.25
30x4-20-52	3.90 2.30
30x4-20-53	3.95 2.35
30x4-20-54	4.00 2.40
30x4-20-55	4.05 2.45
30x4-20-56	4.10 2.50
30x4-20-57	4.15 2.55
30x4-20-58	4.20 2.60
30x4-20-59	4.25 2.65
30x4-20-60	4.30 2.70
30x4-20-61	4.35 2.75
30x4-20-62	4.40 2.80
30x4-20-63	4.45 2.85
30x4-20-64	4.50 2.90
30x4-20-65	4.55 2.95
30x4-20-66	4.60 3.00
30x4-20-67	4.65 3.05
30x4-20-68	4.70 3.10
30x4-20-69	4.75 3.15
30x4-20-70	4.80 3.20
30x4-20-71	4.85 3.25
30x4-20-72	4.90 3.30
30x4-20-73	4.95 3.35
30x4-20-74	5.00 3.40
30x4-20-75	5.05 3.45
30x4-20-76	5.10 3.50
30x4-20-77	5.15 3.55
30x4-20-78	5.20 3.60
30x4-20-79	5.25 3.65
30x4-20-80	5.30 3.70
30x4-20-81	5.35 3.75
30x4-20-82	5.40 3.80
30x4-20-83	5.45 3.85
30x4-20-84	5.50 3.90
30x4-20-85	5.55 3.95
30x4-20-86	5.60 4.00
30x4-20-87	5.65 4.05
30x4-20-88	5.70 4.10
30x4-20-89	5.75 4.15
30x4-20-90	5.80 4.20
30x4-20-91	5.85 4.25
30x4-20-92	5.90 4.30
30x4-20-93	5.95 4.35
30x4-20-94	6.00 4.40
30x4-20-95	6.05 4.45
30x4-20-96	6.10 4.50
30x4-20-97	6.15 4.55
30x4-20-98	6.20 4.60
30x4-20-99	6.25 4.65
30x4-20-100	6.30 4.70

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# THE COMETEERS

*The Sequel to "The Legion of Space"  
tracing the destiny of the people of  
Earth in their battle with a galaxy*

## PART ONE

AH, LAD! Wait a bit, lad!" moaned the bald, blue-nosed fat man. "Old Giles can't hold a pace so mortal swift. He's not the man he was twenty years and more ago, when he went fighting out to bloody Yarkand, with the great adventure of the legion, to save the blessed human race!"

Puffing, the old man paused amid the bright verdure of the roof garden. His fishy eyes glanced back toward the slim, towering central pylon of the Purple Hall, behind them.

"No, lad," he pleaded, "remember that Giles Habibula is only a poor old soldier, ill, crippled, tottering on the brink of his precious grave!"

His fat hand caught at the sleeve of Bob Star's uniform. It was the green of the legion of space. It bore no insignia of rank, nor any decoration for service to the system.

"Tell me, lad," he asked, "where are you dragging poor old Giles, so mortal early in the morning, before he has tasted his miserable scrap of breakfast?"

Bob Star's trim form had stopped beside a mass of snow-white bloom. Like his father, John Star, he was small-boned, quick, active. His lean, cleanly molded face was briefly lighted with a smile. His clear blue eyes looked back at the short, waddling figure of Giles Habibula, warm with a little glow of affection.

"All right, Giles," he said pleasantly. "But hurry! I'm going to the little observatory, at the end of the roof."

"But tell me, lad, what's your mortal haste?" inquired the old man, plaintively. "Will the blessed stars fall out of space before we've had breakfast?"

The brief smile had gone. Bob Star's thin face was left sober, grimly strained, almost prematurely old. Suddenly anxious, half fearful, his blue eyes left the vivid greenery of the fragrant roof, and climbed into the purple-black sky.

"What's the matter, lad?" persisted Giles Habibula. "You're too young to look so mortal grave."

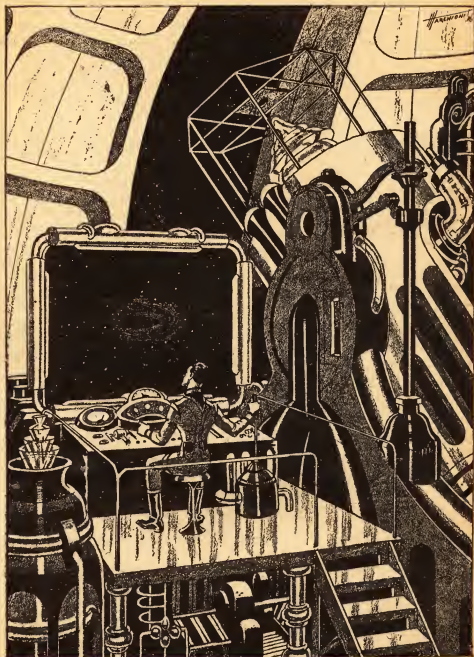
"I woke up before dawn this morning," Bob Star told him, in a slow, worried tone. "I don't know what woke me. But my head was worse than usual"—he touched a pale, singular scar on his forehead—"and I couldn't go back to sleep.

"Looking out of my window, I saw something new in the sky—just a little greenish fleck. It was in Virgo, near the star Vindeiniatrix. It wasn't very big. But I couldn't understand it; and, somehow, as I lay there, staring at it, with the old pain throbbing in my head, the most dreadful feeling came over me. The thing began to seem like a horrible eye staring out of space, and—well, anyhow, Giles, I'm afraid!"

A curious look—Bob Star thought it the shadow of consternation—passed across the yellow moon of the old man's face. But his thin voice protested, unchanged: "So you drag poor old Giles up here on the roof, just to look at a mortal star?"



by JACK WILLIAMSON



*"Twelve million miles long. That means it isn't solid matter—  
couldn't be! But what——"*

"But it isn't a star," objected Bob Star, in a puzzled tone. "It isn't sharp enough to be a nova. Besides, no star ever had that strange, pale-green color. Perhaps it's a comet—but any comet should have been detected and reported long ago, by the big gravity-free observatories out in space. I don't know what it is!"

"It has gone out of sight, since the Sun came up. But I'm going to try to pick it up with the telescope. I don't know why the thing made me so afraid. Might have been the color of it; colors have queer emotional effects.

"Anyhow, it set my nerves on edge. I came up here as soon as I could get into my uniform."

"Ah, lad, I know you did," panted the old man, bitterly. "For I had to tumble my poor, aching old bones out of bed, and drag them along with you. Often I wish that Hal and I had been made the bodyguards of some lazier youth, lad. You know you are never still: you never rest."

"I'm sorry, Giles," whispered Bob Star. "I suppose it's my head that makes me restless. But come on to the observatory."

THE OLD MAN sighed, and wiped his seamed yellow face with the back of his fat hand.

"Ah, me!" he puffed, gloomily. "That mortal comet! It might have waited until my poor old bones were laid to rest. But it must come to disturb the last days of an ailing old man with talk of such bloody danger as makes the monstrous Medusæ of Yarkand seem like pet kittens.

"Poor old Giles! No sooner does he sit down, with a bottle of wine in his trembling old hand, to stretch his legs before the fire of life and doze away into the last precious sleep, until this fearful comet must come, to start him awake with the threat of stellar war. Ah, in life's name——"

Shocked, Bob Star seized the old man's massive arm. His blue eyes bored into the fishy ones of Giles Habibula.

"Stellar war?" he rapped. "Then there is really danger? And you knew about the comet—already?"

Bewildered, the old man shook the wrinkled yellow globe of his bald head.

"Nothing, lad! In life's name, I swear——"

Bob Star's hard fingers sank into his flesh.

"Tell me, Giles! And tell me why you were keeping it from me. I'm no frightened girl, Giles. I can bear trouble."

"Ah, well," he yielded, reluctantly. "After all, 'tis but a whisper—a whisper in the legion. I have no secrets of the council, Bob. And 'twas your blessed father who commanded us to keep it from you. You'll not let him know that old Giles told you——"

"My father?" Bob Star was muttering, bitterly. "He doesn't trust me, Giles. He thinks I'm a weakling and a coward! I know he does!"

The old man shook his head.

"Not so, lad," he said.

Bob Star jerked his head, as if to shake off a clinging fear.

"Anyhow, Giles," he said, "tell me about the comet."

"I have your promise, lad, not to tell your father?"

"I promise," agreed Bob Star. "Go on."

THE old legionnaire drew him cautiously across a lush, yielding carpet of grass, into the shelter of a mass of white-flowering shrubs. His fishy eyes darted furtively about the great roof, and up at the purple tower that pierced the dark sky of the little world. His nasal voice sank to a hissing whisper.

"The mortal thing was first seen ten weeks ago," he revealed, "from the great space observatory, beyond Jupiter. It

was plunging toward the system, with a speed that threw the precious astronomers into fits.

"The thing is no common comet, they say. It is no frail thing of pebbles and shining gas. The blessed astronomers don't know what it is. But it's bigger than any true comet ever was. The mortal thing is near twelve million miles long, lad! And it has a thousand times the mass of the Earth.

"It's no member of the solar system. It's a strange body, out of the mortal black gulf of space amid the stars.

"In the past few weeks, lad, the mortal thing has upset all the calculations of the astronomers. Its motion seems independent of outside forces. It slowed down, lad, when the pull of the Sun should have increased its speed! Now it is almost motionless. They say that it has assumed a regular elliptic orbit about our Sun, out five billion miles—'tis far beyond Pluto."

The small, red eyes looked back across the garden, furtively. They looked hastily into the dark sky, and back again. And Bob Star knew, suddenly, that Giles Habibula was frightened.

"The mortal thing," he said—and his thin voice quivered, "doesn't behave like a comet. It acts like a space flier, Bob—like a space ship twelve million miles long."

"What else?" whispered Bob Star. His voice was low with the hush of excitement, and edged with fear.

Giles Habibula sighed noisily, and shook his head.

"Ah, lad, that's all that I know of it, all that anybody knows. The council has taken alarm—that's why your father was called to Earth, to meet with them at the Green Hall. The observatories have been ordered to make public no further reports of the comet, for fear of undue panic. And Jay Kalam is making the legion ready to defend the system, in the event of stellar war.

"You may know, lad, that a new flag-

ship is being built for the legion. The *Invincible*, Jay named it. 'Tis the greatest ship the system ever built, a thousand feet long. It carries a vortex gun, such as we used in the war with Stephen Orco."

"Yes. What about it, Giles?"

"Well, there's talk, lad, that some expedition will venture out in the *Invincible*, to investigate the mortal comet. A cloud of green surrounds it, that no telescope can pierce. The true nature of the fearful thing is yet unknown."

Bob Star was standing very straight in the plain uniform that he had worn a year. His dark head was uncovered to the cold morning sun. The tense, slender fingers of one hand were tracing, as they often did, the white, irregular scar on his tanned forehead. His lean face was twisted to a mask of bitter grimness.

His hard jaws clenched until they were white. Then, abruptly, furiously, he exploded: "My father told you to keep it from me, eh? He treats me like a sickly baby! Why doesn't he tell you, Giles, to rock me to sleep on your knee?"

## II.

THE TIME was the third decade of the thirtieth century. The place was Phobos, the tiny outer moon of Mars. Once a ten-mile mass of barren stone, it had been transformed by the scientific magic of the planetary engineers into a shining garden.

Gravity cells, installed in the center of the satellite, insured terrestrial comfort. They retained the thin, artificial atmosphere, and anchored the miniature seas, the synthetic soil from which sprang the luxuriant vegetation of dark woodland and landscaped garden.

Against the dark, shining wealth of the gardens, the colored glass of the Purple Hall shone like a magnificent jewel. Three thousand feet high, to the rocket stage that crowned the square

central tower, this ancestral dwelling was the most famous, the most splendid, within the limits of the system.

A minute planet of paradise, Phobos belonged to John Star, his inherited estate. Here, for twenty-two years, he had guarded and cherished that lovely woman, Aladoree, whose secret weapon, known only by the symbol AKKA, was the treasure and the fortress of the system. Here, too, their son, Bob Star, had been reared, save for the eight years of his attendance at the legion academy on Earth.

Bob Star and Giles Habibula had come from an elevator, upon the vast roof of the north wing. Breathing the fragrance of new blooms, in the cold air of morning, they had started toward a low dome of white metal, at the end of the roof.

His hard fists were clenched. Blackly, Bob Star repeated: "Treated like a baby! And I don't like it!"

"Lad," queried Giles Habibula, plaintively, "why must you be always so restless? It's poor old Giles who should be impatient. The days left to him are miserable and few. Why, lad, if I were you——"

"I don't like it!" Bob Star broke out. "It's a year, now, since I left the academy. And I've had no chance to do anything. Dad keeps me shut up here. I'd like to go out, even as a common soldier in the legion, and learn to give and take. But he won't let me——"

"Wait, lad," protested Giles Habibula. "You are heir to the Purple Hall, and to all Phobos. The greatest name in the system will be yours, and the greatest interplanetary fortune. Ah, lad, what more could you want? You are young, wealthy, free to live and love."

"Free?" Bob Star grimly echoed.

"And when the day comes," the old man went on, "you are to become the keeper of AKKA. The secret weapon alone will make you more powerful than

all the rest of mankind. It is because of that responsibility waiting for you that your parents guard you so, lad.

"Ah, me, Bob, but no sane man could pull a gloomy face over such a lot as yours——"

"They aren't shielding me from responsibility to train me to bear it, Giles," Bob Star soberly protested. "It's because they think I can't!"

"Don't you see? I've always been a sort of prisoner, except for those eight years at the academy. From the first day I could walk, you and Hal Samdu have been standing guard over me.

"And now," he said bitterly, "when the comet has brought danger, adventure, other men will go out to it. And they won't even let me know of it!" He swallowed; his blue eyes glittered. "Tell me, Giles," he demanded, "what adventure have I ever had? Since I was a child, and used to slip away——"

"Ah, lad, you were a precious nuisance," mused the old man. "You used to run away in the forest, toward the south pole of Phobos——"

"You always found me and brought me back." Bob Star bit his quivering lip. "You kept me a prisoner, and tortured me with tales of the great things that my father and you and Hal and the commander did in the old days—how you escaped from the prison here in the Purple Hall, and seized a ship and fled from the legion, to go out to the star Yarkand and rescue mother from the Medusæ there, so that she could save the system with AKKA."

His voice trembled.

"Two years ago, I had a chance—in the Jovian Revolt. But they made me stay shut up in the academy quadrangle on Catalina, while dad and Jay Kalam went out to Jupiter to crush Stephen Orco."

His voice went hard as he spoke that name! Stephen Orco. And his hand went unconsciously back to the scar on his forehead.



"Lad, you're a mortal fool," chided Giles Habibula. "Here we have good food, good wine—fine old wine, from the largest cellars in the system. We have peace and comfort. And the shining gardens of Phobos are pleasant, when an old man longs for a nap in the sun.

"And old Giles doesn't like the look of that comet, lad. It has an evil, greenish cast, and it acts as no comet should. Ah, lad, let us forget the comet," he pleaded. "Come, let's have a taste of breakfast, and then find a place to sit in the sun.

"Leave trouble alone, lad, and it will come too mortal soon!"

"No, Giles," said Bob Star, "I'm going to have a look at it, with the telescope." And, he added grimly: "I'm going to make dad get me a place on the *Invincible*, if it goes out to the comet."

"Ah, me!" Giles Habibula sighed resignedly. "You'll be dragging Hal and me into trouble, yet." His old voice plaintively thin, he implored: "Hurry, lad, with all this. Remember we haven't had a blessed taste of breakfast!"

BOB STAR paused a moment at the door of the little observatory. Its white, gleaming dome stood at the north end of the great roof. Beyond and far below lay the convex surface of tiny Phobos, the dark rich green of its forests and meadows spangled with the silver of artificial lakes.

Behind him, the square purple shaft of the central tower soared into the purple-black sky, where stars still shone. Low in the east burned the small sun, blue-white, intense. Opposite, westward, hung the huge tawny disk of desert Mars, its ochre-yellow surface darkly marked with the fertile zones.

His blue eyes narrowed, drilling into the somber purple of the sky above it. He had seen the comet there, at dawn.

Giles Habibula sprawled himself on a bench in the sun, beside the dome. He

fumbled in the capacious pockets of his uniform, and produced a little empty flask, with a graduated scale along the side. He held it up to the sunlight, and his fishy eye dwelt gloomily upon a single lonely drop.

"Go on, lad," he breathed moanfully. "Make haste with your gazing at the mortal comet. Poor old Giles will wait for you. Old Giles is good for nothing, now, but to roast his aching old bones in the sun."

Within the darkness of the little observatory, Bob Star seated himself at the telescope. As it whirled in response to his touch, the great barrel above swung to search the void of space with its photo-electric eye, and the pale beam of the projector flashed across to the concave screen.

The screen was a well of darkness. Faint stars flecked it. The point of white flame, he knew, was the third-magnitude star Vindemiatrix. He found the little patch of pallid, uncanny green—the comet!

He stepped up the magnification. Vindemiatrix and the faint stars slipped away. The comet hung alone in the chasm of utter darkness. It grew. It was an ellipsoid of cloudy, pale-green. A little football of green, strange fire, he thought, drifting through that gulf of ultimate night.

"Twelve million miles long," he muttered. "That means it isn't solid matter—couldn't be! But what's inside?"

USING ray filters and spectroscope, with the full power of the electronic circuits, he strove to pierce that veil of dull-green. It was in vain. He sprang to his feet and stopped the instrument, impatiently snapping his fingers.

"No use," he told Giles Habibula, outside. "I see the green surface of it. But nothing gets through—not a ray!"

He shuddered a little.

He had never seen anything so bafflingly weird, so strangely terrible, he

thought, as that mysterious cloud beyond Pluto. The vastness of it overwhelmed the mind. It was dreadful with the chill mystery of the interstellar wastes.

Giles Habibula rolled heavily to his feet.

"Well, lad, you've seen it," he wheezed, cheerfully. "The best astronomers in the system have done no more. Shall we go down to look for breakfast?"

Bob Star followed him, silently. His mind was still lost in the labyrinth of a vast consternation.

They were midway across the roof, when Giles Habibula abruptly paused, pointing westward with a heavy arm.

"What is it?" cried Bob Star, turning.

He saw it, then, a slender white arrow, sliding across the great ochre disk of Mars. Driven before it was a pale tongue of blue flame. It passed across the limb of Mars, and drifted upward.

A sudden trembling eagerness had overcome Bob Star. He stood transfixed amid the shining foliage, staring into the somber sky.

The blue flame wheeled and grew. A rustling whisper came into the air, and increased to a roaring gale of sound. A slender, tapering spindle of silver drifted above him, pushing roaring torrents of flame.

It passed so near that he could see the black dots of observation ports, and the tiny-seeming letters that spelled: *Phantom Star*.

It vanished above the rocket stage, on the lofty purple tower. The roof quivered ever so slightly under his feet. And the thunder of the rockets faded.

Bob Star seized the thick arm of Giles Habibula, and started running back toward the elevator in the tower.

"Dad has come back from Earth," he cried. "I'm going to meet him. He'll know all about the comet, and what the Green Hall Council has done!"

### III.

"YOUR MOTHER is waiting in the Green Room," a guard in the corridor told Bob Star. "There was an ultra-wave message from your father. He is coming to her there."

He let Bob Star into the room. It was large, its high walls paneled with emerald glass and silver. From two sides, vast windows overlooked the dark-green and argent of the convex landscape. Floor and massive furnishings were of Venusian hardwoods, polished to ruby-red luster.

Bob Star's mother, she who had been Aladoree Anthar, was sitting in a great red chair in the middle of the room, quietly. She looked up quickly at his entrance. Changing lights illuminated her brown hair as she moved. And her cool gray eyes were warmed with a tender smile.

Her rich voice said: "You're up early this morning, son."

Bob Star was standing at the door, fighting a sudden nervous weakness. He wanted to go across to his mother, and kiss her, and tell her that she was beautiful. But a stiff awkwardness had seized him. And he wished bitterly that she had been a common human being, not the almost sacred keeper of the mystic AKKA, and the most important personage in the system.

His voice seeming strained and queer, he asked: "Father is coming here?"

The stately loveliness of her head nodded; the flowing lights in her hair made unwonted tears flood his eyes.

"He has just landed. There was a message for me to wait for him here, alone. It must be something unusual. He has been at the Green Hall. You had better go, Bob, for a few minutes. John wanted to see me alone."

Bob Star stood rigid, silent, twisting savagely at a button on his uniform. It came off in his hand, and he looked down at it, unseeing.

His mother rose suddenly, and came across the polished floor.

"Why, Bob!" she cried, her voice softly urgent. "What's the matter? You look so pale and strange." Her gentle hand caught his arm. "Why, you're shaking, Bob! Are you ill?"

He looked at her, blinking angrily at his tears.

"Why do you treat me so?" he gasped, huskily. "Why do you?"

"Bob!" It was a hurt cry. "We've always tried to be kind——"

"Kind!" he muttered, bitterly. "Yes, you're always kind. But you don't trust me! You keep me shut up like a baby, away from life. I want to have a chance to do things, and meet danger and adventure. I don't care if I get hurt! It would be better to be killed, than to be a prisoner here always——"

She was patting his shoulder, comfortingly. Her gray eyes were big with distress.

"I'm sorry, Bob," she said. "I had no idea you felt that way. John and I have always been very proud of you, Bob. And you know that we have meant for you to be the next keeper of AKKA. You will have chance enough to do important things."

"But how can I ever learn to bear responsibility," he demanded, "if you treat me like a baby? I've been out of the academy a whole year, now. And I've had no chance——"

"I hope we haven't sheltered you too much, Bob." The soft voice hesitated. "There—there's something I'd better tell you, Bob."

He stiffened, at the sudden gravity of her voice.

"You know that you made a very brilliant record at the academy, Bob. Only one student has ever made a higher average. He was Stephen Orco."

Bob Star winced from that name; his fingers drifted instinctively to the scar on his forehead.

"When you finished, Bob, the in-

structors told your father that you had worked too hard. The psychological tests, they said, showed that you were near a mental breakdown. The academy doctors advised a year of complete rest for you, before you undertook any duty. That's why you've been here, Bob. We didn't tell you, for fear it would worry you."

Bob Star was staring past her, at the green-and-silver wall.

"It wasn't work," he whispered. "It wasn't work!"

His fingers were still tracing the pale outline of the scar.

IN A MOMENT he looked around, and saw that his father had come into the room.

Striding silently across the scarlet floor, John Star, as always, was straight and trim in the green of the legion. He was slender and hard and his youth was well-preserved, so that he appeared hardly older than his son. He still looked, after twenty years as master of the Purple Hall, as much the legionnaire as when he quit the ranks.

He walked straight to Aladoree, carrying in his hand a heavy sealed envelope. He administered a brief, soldierly kiss, and handed her the envelope.

"Darling," he said, "this is an order from the Green Hall Council."

Then his eyes found Bob Star, and his lips compressed a little.

"Robert," he said, "I wished to see your mother alone."

Bob Star stood for a moment speechless. The emerald-and-argent walls were cold as ice. The scarlet floor was a terrible void. His knees were going to buckle, and he had nothing to hold to.

"Please, sir——"

He whispered two words, and his dry throat stuck.

"Let him stay, John," his mother said, quietly.

Some of the ice thawed out of the green walls, and the floor grew steady.

"If it's about the comet," said Bob Star, huskily, "I have seen it."

"It is." His eyes went to Aladoree, and back. "Take a seat, Robert."

Bob Star collapsed gratefully into a massive red chair. He clung to the arms of it, and tried to control his trembling, his rushing breath.

The wide gray eyes of his mother were looking slowly up toward John Star, from the bulky, impressive document she had taken from the envelope. Glancing up from the great seal of gold and green, Bob Star saw that his mother's eyes were big with an incredulous, shocked dismay.

"John," her still voice said, "this is an order for me to destroy the green comet in Virgo, at once, with AKKA."

John Star's military head made a sharp little nod.

"The resolution to destroy the comet passed the Green Hall Council eight hours ago," he said huskily. "I brought the order to you at the full speed of the *Phantom Star*—a record crossing."

The big gray eyes rested for a time on John Star's lean, stern face. Then, very soft and quiet and slow, Bob Star heard his mother's voice: "John, do you know what you have asked me to do?"

John Star looked at her, with a surprised impatience.

"I do," he said. "I spoke before the council, in favor of the resolution. The vote was very close. There were sentimental objections."

"Perhaps I am sentimental, John," said the soft voice. "But I don't want to destroy the comet. It is a very wonderful thing—so wonderful that our scientists will not undertake to say what it is. But I believe that there are worlds within that green cloud, John—inhabited worlds, advanced beyond anything we can dream of—think what a science it must be, John, that drives the comet like a ship!

"You see what you're asking me to do, John? To negate in one instant

millions, billions of years of evolutionary progress! To destroy the work of millennia of intelligent effort, of advance! To sweep into nothingness whole worlds!

"The comet seems strange to us, John. It frightens us. But the beings of it must be as far advanced as men—or ten times as far. And they have as much right to live as we do, John. Certainly it is wrong to annihilate them, just because we are afraid."

Still standing, John Star had drawn himself up very straight.

"I spoke before the Green Hall for the destruction of the comet," he said, with a hardness in his tone. "My arguments are still good. To begin with, the science of the Cometeers—that is the term we have used for the beings, whatever they are, that drive the comet—is far above our own.

"I am certain that, but for their lack of AKKA, they could easily destroy mankind. And I'm sure they do not possess it; otherwise they would already have attempted to use it.

"Their hostility is as certain as their power." An oratorical ring had come into John Star's voice, as if he were quoting from his speech. "On Earth, everywhere in the system, the necessities of survival have made enemies of life forms even closely kin. And the Cometeers are doubtless an alien form of life—perhaps a form that we should not recognize as life at all!

"Their very approach is evidence of a purpose in relation to our worlds. That purpose will be necessarily for their own benefit, because the Cometeers are obviously a successful and hence selfish form of life.

"But we have better proof than such philosophic considerations that the Cometeers are deadly enemies!"

"What is that, John?" Aladoree softly inquired.

"The Cometeers have already visited most of our planets."



"People," cried Bob Star, "have actually *seen* them?"

John Star didn't look away from his wife.

"The creatures of the comet," he said, "are—or made themselves for the occasion of their visits—invisible! They came in some massive machine, whose powerful etheric fields have disturbed communication at the time of each suspected visit."

Quietly, Aladoree asked: "Exactly what have they done?"

"They have been investigating our defenses," John Star told her. "The invisible ships, on each occasion, have landed near some stronghold of the legion. On Earth, twenty-four hours ago, the invisible raiders killed four guards—very unpleasantly. They entered a locked vault that we had thought impregnable. They escaped with a precious military secret."

JOHN STAR stepped a little toward his wife. And his lean face was suddenly pleading. He was no longer the soldier and orator, but a man, anxiously begging.

"Please, Aladoree," he said. "It is a terrible thing—but don't you see you must do it? And right away? Your life is in danger, darling, if you don't! For all we know, one of the invisible raiders may be with us, in this very room."

He looked about, uneasily. And Bob Star saw agony on his face, tears in his eyes, as he took Aladoree suddenly in his arms. He was surprised; almost he had forgotten that his father was a man, as well as a soldier.

"Please, darling," he whispered.

"What was the secret," asked Aladoree, "that they took?"

John Star looked at his son; his lips drew tight.

"They learned," he said, "that the prisoner known by the name of Merrin is still alive."

Bob Star watched dismay sweep the color from his mother's face. He saw the faint, shocked nod of her fine head.

"Well, John," he heard her still voice, "if they know about—about Merrin, perhaps you are right. Still I believe that it is a terrible crime. But if the council has ordered it—and if the Cometeers know about Merrin—then I shall destroy the green comet."

#### IV.

"MUST I GO?" Bob Star asked.

With a grave little smile, his mother shook her head.

"No, Bob," she said. "You may watch, since one day you are to be keeper of AKKA. There's little to see," she added. "And you could watch a thousand times without learning the secret, for the control of AKKA is more than half mental."

"Really, Bob," she added, "there is no such thing as matter, as we usually picture it. Matter is really energy, locked in stable constructs. And that energy, in the last analysis, partakes of the nature of mind."

Already, as Bob Star watched, she had removed half a dozen little objects from her person: pen, mechanical pencil, watch, a metal ornament from her dress, an iron key. With a deft, trained swiftness, she unscrewed the barrel from the pen, slipped two tiny perforated disks from the cover of the watch. Upon the mechanical pencil, whose working parts served as a fine adjustment, she began to assemble a tiny, odd-looking contrivance. The chain of the ornament formed a connection; the clip of the pen would function as a key.

"That," whispered Bob Star, incredulously, "will destroy the comet? That tiny thing destroyed Earth's old Moon?"

"With the aid of this instrument, Bob," she said quietly, "my mind can destroy any object in the universe. Size



*All was quiet until we  
approached Callisto.*

*Then—*

and distance don't matter. The effect is a fundamental, absolute change in the warp of space, which reduces matter and energy alike to meaningless anomalies."

Bob Star was silent for a moment, breathless. And he shrank a little, with startled, involuntary dread, from this gravely smiling woman. Suddenly she seemed no longer his mother, but a strange and terrible being. Her face

was shining with a calm, passionless serenity.

"Mother—mother," he whispered. "You're like—like a goddess!"

It seemed strange that she should hear him, in her remote detachment. But she smiled at him, briefly, and said: "It's lonely to be a goddess, Bob."

Her eyes left him again. Presently she said abruptly, from her absorption: "Only one thing can serve as a barrier against the weapon. That is the counter warp in space, created by another master of the principle of AKKA."

The little instrument seemed to be fin-



ished. She was adjusting it, lifting it to sight through the tiny holes in the little disks. Bob Star wished to question her about it. But the tranquil, almost divine authority upon her glowing face stilled his tongue.

A curious strong resonance sounded in her voice when she said to John Star, "I am ready."

They walked to the vast transparency of a west window; Bob Star saw them for a moment outlined against the purple-black, star-shot sky of Phobos. And Aladoree was about to lift the weapon, when John Star caught her arm, saying

tensely, "A ship! What does that mean?"

Aladoree lowered her small implement, saying: "I shall wait and see."

Beyond them, Bob Star saw a pale blur of blue flame, against the dark of the sky. And he heard the whisper and the rushing and the thunderous roar of rockets. The air was alive and trembling with a mighty sound, and he glimpsed a mountain of white metal, flashing by the window.

For a little time he was bathed in those thundering seas of sound, and his eyes were blinking against the darkness

that had followed the dazzle of the rockets. Then the red floor rocked under his feet, and the mighty voice was abruptly still.

In the sudden silence, John Star's voice sounded curiously small and far away.

"It's Jay," he was saying. "He followed me with the *Invincible*! It's too big to land on the rocket stage. He had to come down in the forest."

He pursed his thin lips.

"I don't know what he wants. But it must be secret and urgent, or there would have been some message on the ultra-wave. But you must not wait," he said sternly. "You have the order from the council."

"But I shall," said Aladoree. "Perhaps the comet need not be destroyed."

BOB STAR had joined them at the great window. A thousand feet below and a mile away, he saw a shining mountain of argent metal. The tapering cylinder of the *Invincible*—slender-seeming, for all its vastness—lay in a wide meadow, walled in with forest. The grass about it was black and smoking from the rocket blasts.

Even from this height, the gleaming miracle of it appeared colossal. The men appearing upon the mirrorlike sheet of its deck were black specks, merely, all but invisible.

Bob Star felt a momentary glow of pride in the legion and mankind. That thousand-foot, shining wonder was the most splendid, the most powerful machine that men had ever made. Newly designed geodyne generators gave it speed and acceleration almost incalculable. New, refractory alloys made the mass of its hull invulnerable. Its chief defensive weapon, the atomic vortex gun, could desolate planets.

Silent, awe-struck, he watched as a low, streamlined deck house collapsed, and a ten-man rocket flier catapulted from the hull. It lifted, a mere bright-

winged insect above the overwhelming, refulgent mass of the *Invincible*, and wheeled toward the rocket stage above the tower.

Within the green room, his mother was still holding that tiny, singular little instrument in her small hand. Fascinated, Bob Star stared back at it again. It was so little! The materials of it were such commonplace things! It looked so utterly insignificant!

"And that," he muttered, "could destroy the *Invincible*!"

"That," said his mother, softly, "and my will."

And, seeing the burning curiosity in his eyes, she added: "I carry the instrument taken apart, and disguised, so that it cannot easily fall into other hands. But there's really little danger. No manipulation of the instrument, alone, could have any effect. The mental control is essential."

Bob Star made the legion salute, briskly, when Jay Kalam entered the room.

Oddly, although he had been the legion's commander for two decades and more, he looked far less soldierly than John Star. He was slender and dark and tall, without any military stiffness of bearing. His fluent ease of manner had never deserted him. And his green-and-gold uniform could never disguise the grave reserve of the scholarly gentleman.

His thin, almost austere face was composed, but his manner betrayed urgent haste.

"John!" he called imperatively from the doorway. "Aladoree! Have you destroyed the comet?"

Aladoree shook her head.

"We saw you coming, Jay. We waited. But I'm ready——"

His lips relaxed; the breath sighed out of him.

"Then I'm in time," he said thankfully. "The council has cancelled its order for the destruction of the comet."

"What's that?" snapped John Star, his voice hard and thin as the sound of breaking glass. "Why?"

Deliberately, Jay Kalam drew from the pocket of his uniform another heavy envelope, which he gravely presented to Aladoree.

"This is the official cancellation of the order for the destruction of the green comet," he said.

GRATEFULLY, her eyes scanned the document which was magnificent with the great seal of the Green Hall.

"I'm glad," she said. "It would have been an unthinkable crime."

"Why?" demanded John Star, again. His lips were tight, his narrow face pale and stern. "What's the reason for the change?"

Jay Kalam had turned toward him, calmly.

"John," he said quietly, "many of us felt that it would be wrong to destroy the comet, unless it proves absolutely necessary. The murder of a man is nothing, John, against the murder of a world. And it would be murder to destroy the comet before we must."

"But, Jay," John Star protested, earnestly, "we know that the Cometeers are hostile. We know that they've found out about Merrin. Every moment that the comet exists increases the danger to the system."

The commander nodded his dark head, slowly.

"I know your arguments, John," he said. "They are grave. The system is no doubt in severe danger from the comet. We must take stern measures to assure our safety."

"But we aren't justified, yet, in annihilating the comet. I feel that, John, very deeply. I believe that the council was swayed unduly by your arguments, John. After you departed, I got permission to speak, myself, before the Green Hall, in favor of a more moderate policy."

"I suggested that beings so far advanced as the Cometeers must be, must know, justice, magnanimity, and mercy."

"And the council, as you can see, voted with me, by a good majority. There is still justice and mercy in the human heart, John. And I hope," he added gravely, "that it may not betray us into catastrophe. For I can feel the pressure of your arguments, John."

"I should have sent a message to stop you, on the ultra-wave," he went on. "But it would be folly to discuss such matters upon the ether, when the Cometeers are doubtless picking up, analyzing, decoding, and studying every word. And you had only two hours start, I thought the *Invincible* would overtake you. It seems that I was almost too late."

John Star was staring at him. His thin face was pale and rigid. And his voice, when he spoke, sounded to Bob Star hoarse and stern and terrible.

"Jay," he said, "you will wish you had been too late. And the system will. That paper"—he jerked his head—"is the death warrant of mankind!"

"I hope, John," said Jay Kalam, "that you are wrong."

"I wish I were," said John Star, grimly. "I have no desire to be needlessly ruthless. But I know this, Jay: By saving the comet you have murdered the system."

## V.

THE SILENCE of terrible strain, for a little time, reigned in the green room. John Star stood motionless upon the great red floor. His pale face was bleak and rigid as a mask of death.

Bob Star heard the sudden catch in his father's breath, saw the wet glitter in his eyes, watched him stride to Aladoree and take her in his arms. After a moment he pushed her a little away from him, and turned with his arm still around her waist, to look at Jay Kalam.

"Well, Jay," he asked, in a flat, dry voice, "if we can't destroy the comet, what are we going to do?"

Jay Kalam came a little toward him, and grasped the back of a massive red chair.

"The Green Hall left the action to be taken in my hands," he said gravely. "I considered the situation very carefully, during the flight from Earth. I have a plan that I think is safe."

John Star faced him, listening intently.

"There are three things," he went on soberly, "that we must do: protect Aladoree, guard the prisoner, Merrin, and find out if the system is in real danger from the comet."

"The first I shall leave to you, John."

John Star nodded with a grim resolution; his arm instinctively grew tight about the woman beside him.

"I think the Purple Hall, here," Jay Kalam went on, "is no longer safe. The defenses are good—but so were the defenses of the vault on Earth, which the Cometeers raided. Their invisibility, I think, would enable them to land and enter the building, undetected. And evidently they have strange and powerful weapons."

"I suggest, John, that you take Aladoree away, upon the *Phantom Star*, immediately. Where, I will leave to you. You can send information to some member of the council, about how to communicate with you, if the destruction of the comet becomes necessary. Otherwise, the fewer who know where you are, the better."

"Yes, sir."

John Star made an unaccustomed legion salute.

"The defenses of Merrin," Jay Kalam went on, "are already as good as the legion can make them—except in one particular. I think that I shall call upon Bob, to make them complete."

His lean face turned to Bob Star, his dark eyes appraised him.

"Are you ready, Bob, to undertake a very important, and very dangerous duty, for the legion and the system?"

"Yes, sir," replied Bob Star, instantly.

"Jay," John Star said protestingly, "I was planning to take Robert with us, in the *Phantom Star*. I don't believe that he is ready for duty."

Aladoree had caught at his arm.

"John," she interposed, "Bob has just been talking to me about his situation. I believe that we have made a mistake in keeping him here. I think that what he needs is a chance to prove himself."

"Thank you, mother!" Bob Star cried. And he turned eagerly to the grave commander. "Please," he begged. "Take me! It doesn't matter how hard or how dangerous it is. I'd rather be killed, than be shut up here like a prisoner any longer."

"John," Kalam was saying to Bob's father, "for this service I must call upon your son. No other man will do. You recall the adjustment of the Jovian Revolt. There is the matter of a certain oath."

John Star nodded silently. For a long moment he looked at his son, with an odd question in his eyes. Suddenly he nodded.

"Very good," he said. That was all.

"For the third matter," Jay Kalam said again, "I am going out to the comet, in the *Invincible*. We shall keep in touch with the Green Hall, so long as possible, with tight-beam ultra-wave. I hope to discover the true nature of the comet, and whether it really represents the danger that you believe it does, John."

John Star came forward and shook the commander's hand. He swallowed, and said huskily: "Jay!"

"I think that I shall see you again, John," said Jay Kalam, evenly. "If we don't return, I concede that it will be necessary to destroy the comet. It will take us five days to reach it, five to return. Give us two more."



"If the *Invincible* has not returned in twelve days, John, you may consider us lost—and my objection to the destruction of the comet at an end."

He paused a moment, and turned to Bob Star.

"Bob," he said, "you will come with us on the *Invincible* to Merrin's prison. There will be time on the crossing for me to explain the details and the importance of your duty. You may make your farewells. We will go immediately."

John Star came to the commander, saying: "I have decided where to take Aladoree. As for communication——"

He lowered his voice.

ALADOREE was coming across the red floor, to Bob Star. Her tall loveliness checked his heart with a little pang of yearning affection; and the liquid melody of her voice, when she spoke, brought back to him all the bittersweet of childhood.

She took his hand in a warm and tremulous grasp. Her eyes swept fondly up and down his trim, straight figure, and tears were swelling in their corners.

"Bob," she breathed, "kiss your mother! You haven't kissed me, Bob since nine years ago—since the day you went away, to the academy. And I think"—her clear voice quivered—"I'm afraid, Bob, that we shall never be together again!"

He touched the bright warmth of her lips, briefly. A sudden cruel tension had closed on his chest. His throat ached. The beauty of her face swam in his tears.

"My beautiful, beautiful mother!" he whispered. And he asked, swiftly: "Why are you afraid?"

"I wish"—she breathed—"I wish almost that we had destroyed the comet, Bob. I'm afraid your father is right."

"Why?" said Bob, again.

After a moment of silence, she said, "Jay Kalam will tell you about the man

we call Merrin, Bob." A cold dread was in her tone. "I saw him, once. It was after he was a prisoner. He was shackled, guarded. And yet, somehow, he was terrible."

Staring past Bob, her eyes had grown wide again, and dark with a shadow. And still her voice was hushed with fear.

"He was a giant, Bob. There was a splendor in him, and a dreadful strength. His eyes were shining with an unconquered power. He's more than a man, Bob."

"He's like a rebel god. And he cares no more for the rest of humanity than a god might. His mind, his spirit, are as splendidly powerful as his body—but they aren't human. Somehow you must admire him. But you fear him more. He's alien as a god."

"He didn't speak to me, Bob. He simply looked at me, as they led him across to his cell—taking mincing little steps, in his shackles. His blue eyes were burning—and they were cold as ice. They were undefeated, carelessly unafraid."

"He laughed at me, from a distance I could never reach across. He was a prisoner, manacled before me. But his laughter was as carelessly mocking as that of a malicious god, looking out of another dimension."

"You must try to guard him well, Bob. For in him you are guarding the lives and the happiness of all the human race."

Astonished, puzzled, Bob Star whispered fervently, "I will."

Her hand grew tight on his. Her other patted his straight shoulder.

"Come, Bob," Jay Kalam was saying. "We must go."

He embraced his mother. The warmth of her slender body brought to his eyes the sting of sudden tears.

"I love you, Bob," she was breathing. "And I'm—oh! so afraid!" She shivered, against him. "Be careful, son. Don't let Merrin escape!"

At the door, Bob Star shook the strong hand of his bronzed, military father.

"Good-by, Robert," he said, with an unwonted huskiness of emotion. "Your mother and I may see you again, soon. I hope that we may. But, whatever happens, remember that you are an officer in the legion of space."

"Yes, sir," whispered Bob Star.

And his hand rose in the legion salute.

In the doorway he stopped abruptly, at sight of the seamed, yellow moon face of Giles Habibula, who was waiting in the corridor.

"My old guards," he asked quickly of Jay Kalam, "may they go?"

Jay Kalam's lean, dark face warmed to the glow of old memories.

"Giles and Hal?" he said. "Of course! Have them come on."

## VI.

A CONCEALED DOOR behind the *Invincible's* chart room opened into a long chamber that it surprised Bob Star to find, upon a warship of space. Golden light from hidden sources gleamed upon the rich luster of heavy rugs. The pale ivory walls were hung with the dark simplicity of Titanian tapestries. The massive furnishings, in silver and black, were luxuriously simple. The high shelves of ancient books and the optiphone, with its tall cabinet of records in several languages, betrayed the scholarly æsthetic in the master of the room.

The *Invincible* was driving out, away from Phobos, away from yellow-red Mars and the Sun. Her new-design geodyne generators—electro-magnetic geodesic deflectors—gave her a positive acceleration no other ship of the system had ever reached. Every atom of ship load and crew was deflected infinitesimally from the space-time continuum of four dimensions, and thus freed of the ordinary limitations of acceleration

and velocity, was driven around space, rather than through it, by a direct reaction against the space warp itself.

But in that hidden room, even the vibrant droning of the geodynes was shut away, as if it had been a room in another space. There was no faintest sense of the ship's tremendous velocity. And the crispness of the cool artificial air suggested fragrant spring in the woods of Earth.

Jay Kalam gave Bob Star a comfortable chair, saying: "I'm going to tell you now, Bob, about the prisoner we call Merrin, and the details of your duty in the present emergency."

"Tell me," Bob Star asked, his voice low and tense, "Merrin—is he—is he Stephen Orco?"

Upon the commander's dark, lean face appeared the faint reflection of a suppressed astonishment.

"Bob," he asked, with alarm betrayed by the quickness of his voice, "how—why do you think that?"

"My mother described Merrin," Bob Star said. "And I knew there couldn't be another such a man. But I thought"—his lean fingers came up, as they so often did, to the pale, odd scar on his forehead—"I thought Stephen Orco was dead, since the Jovian Revolt."

The commander's dark, austere face had relaxed with relief.

"I'm glad that's how you knew," he said. "For Stephen Orco is dead—buried—to all save a trusted few." His face was grave with the question: "You knew him?"

"I knew him," said Bob Star. His voice was abruptly hard, and his fingers trembled, tracing the ragged outlines of the scar.

"When?"

"Nine years ago," said Bob Star, in a tone that was strained and grim. "He was in the graduating section, during my first semester at the academy, on Earth. He was handsome, brilliant. At first I was attracted to him; then——"

His lean jaws closed with a snap.

Jay Kalam's dark eyes were warm with sympathy.

"Bob, you had trouble?"

Bob Star's head jerked in a savage little nod.

"It was our affair," he said. "I was going to find him, after my graduation, and settle it. But I thought he was dead."

"You are going to meet him again," Jay Kalam promised gravely. With a quiet authority, he said, "Tell me about your quarrel."

Bob Star hesitated.

"I haven't told any one—not even my parents."

He looked up at Jay Kalam, his lean face shadowed with long-remembered bitterness. His eyes warmed to the understanding he saw there, and he nodded in respect to the commander's grave authority.

"You know," he began, "the tradition of hazing at the academy?"

Jay Kalam nodded.

"The officers tolerate it," he said. "It is believed to be good for discipline."

"You know the rule, then," Bob Star went on, "that each new cadet must accept and obey one command from each man in the graduating section?"

"It isn't bad, commonly. The commands are usually harmless. The new men are eager to obey. The custom makes for fun and comradeship."

"But Stephen Orco was no usual student. A giant of a man! He was remarkably handsome, and an outstanding athlete. His hair was red as flame. And his eyes were a peculiar bright, cold-blue, always shining with a clever, devilish malice. In his studies he was the most brilliant student ever in the academy."

BOB STAR'S narrowed blue eyes were looking past the tall commander, at the dark-hued, simple patterns of a Titanian hanging. In the pain of an

old injury, he had forgotten his first awe of Jay Kalam. His words fell swiftly, hard as slivers of ice.

"Stephen Orco must have had no real friends, I think," he said. "All the boys must have feared him. Yet he had a kind of popularity. His remarkable strength and his malicious wit made it uncomfortable to be his enemy."

"More than that, he had a kind of fascination. He was a born leader. His reckless audacity matched his uncommon abilities. He would dare anything. His pride fitted his capacities; it would have won contempt for any lesser man—but he was anything but contemptible."

"That pride made him try to excel in everything—usually with success. It seemed to me that he had a jealous enmity toward every one else, that he hated and scorned every rival. He loved no one; he was completely selfish in every friendship."

"And," said Bob Star, "from the first day he hated me."

"Why?" asked Jay Kalam, quietly.

"Jealousy, I suppose. He knew that I was John Star's heir, and that one day I would be keeper of AKKA. He was jealous of that wealth and power."

"Did he mistreat you?"

Jay Kalam was looking at Bob Star's fingers, still tracing the scar.

"From the first day," said Bob Star, "he injured me in every way he could. He tried to prevent my winning any honors, and to make me unpopular with the instructors and the students. He made me the butt of practical jokes. He was clever, and he had influence. He did a good deal."

"But there was only one thing that I can't forget."

"What was that, Bob?"

"One night," Bob Star said swiftly, "I was walking alone on the campus—my nerves were worn out from my first examination on geodesic navigation. In

the dark I met Stephen Orco, with three of his friends. Or perhaps I shouldn't call them friends; it was fear that held them to him, not affection.

"Stephen Orco called to me to stop, and I did. He asked me if I had accepted any command from him. I told him that I hadn't. He turned to the three others. They whispered. I heard the others snicker. And then Stephen Orco turned to me, with a malicious glitter in his blue eyes, and told me his command."

Bob Star paused. His lean face was white with the pain of memory.

"What was the command?"

"He told me to speak my mother's name," whispered Bob Star, through white lips, "and another word.

"I told him that I wouldn't do it. He reminded me that he had the traditional right to inflict penalties on me, if I refused to obey. I told him to go ahead.

"Near us, on the campus, was a little isolated laboratory, that had been built to test omega rays as weapons. Stephen Orco had been working there, and he had a key. They took me into the little room, so that they wouldn't be interrupted—for I had made friends, in spite of Stephen Orco.

"They did various things, and I didn't speak. Stephen Orco's terrible pride was burning cold in his blue eyes. And he told me that he would make me yield, if he had to kill me—even if it meant his own life, for murder.

"I told him to go on.

"He exhausted the usual penalties, and thought of various others. He was clever, and he had a taste for such work. Finally, he had his three companions throw me on the floor. They were already frightened; they wanted to let me go. But he laughed at them, and threatened to murder and dismember me, and let them die with him, for the crime.

"In the end, they held me. And he turned the omega-ray projector on my head. It was a new thing, then; that

was before its effects were fully known. The council has since made its use illegal as a weapon, or even in the laboratory."

JAY KALAM nodded a little, without speaking. His dark, rigid face had grown a little pale.

"At first the ray burned only the surface—it merely stung, like the Sun under a burning glass. But Stephen Orco began stepping up the penetration. The flame of it burned deeper and deeper into my brain."

Bob Star's voice had become low and husky.

"For a while I was horribly afraid—afraid that I would yield to his torture. But, suddenly, with that flame burning into my brain, I felt that I was strong enough. I thought that nothing he could do would beat me. And I laughed back at him. I promised, then, to kill him.

"I struggled a little. But that was no use. The others were all in their last year, and athletes. I was twelve years old, and half paralyzed from the pain of the ray.

"Stephen Orco stood over me. That proud, handsome face was lighted with the light from the instruments. The red hair was like a flame. The blue eyes glittered with a cold, scornful, mocking triumph.

"Say it, pup,' he would tell me. Then he would step up the penetration of the ray again, and tell me, 'Say it, pup.'

"I didn't say it. The scene changed into a kind of nightmare. My naked brain, with the skull stripped away, was sinking slowly in a bottomless ocean of pulsating red fire. And that careless, mocking voice was ringing through the ocean of agony, repeating: "'Say it, pup!'

"Finally the fear came back. I realized my will was weaker than the ray.

"The pain of it was less terrible than the fear that I should give up.

"But I didn't. When I woke up it

was nearly dawn. They had carried me out of the laboratory. I was lying out on the campus, above the beach. A bandage had been tied around my head. One of the others must have done that.

"I got up, and tried to walk to the infirmary. I fainted on a path. They found me there; I woke up again in bed. It was three weeks before I could walk again. I told the doctors that I had been experimenting with the omega-

ray apparatus, and hurt myself accidentally."

"Bob," the commander asked gravely, "why didn't you report the truth? Stephen Orco would have been punished and discharged. He would never have had the opportunity to lead the Jovian Revolt."

"It was our quarrel," Bob Star told him, grimly. "I meant to finish it—if I could!



*In the midst of the apparatus, in a kind of cradle,  
was Stephen Orco!*

"As I lay in bed, coming out of the delirium of encephalitis, I again resolved to kill Stephen Orco—if I could."

"What do you mean," asked Jay Kalam, "if you could?"

"That fear that came back, as I was going unconscious under the ray, has never left me," Bob Star said. "I've never recovered from the effect of the ray. There's still a pain, like a little red hammer, that beats against my brain, day and night. In nine years, it hasn't stopped."

Bob Star's face was white, and cold sweat broke abruptly on his forehead, and in the palms of his hands.

"I'm afraid, commander," he whispered hoarsely. "I couldn't kill Stephen Orco! Or any man. I know it, commander!"

He sank back in the chair, pale, quivering.

"I'm not a coward," he gasped, "but—*something* wouldn't let me kill a man!"

## VII.

THE TALL COMMANDER of the legion stood for a time, within the rich-hued, lustrous pool of a great rug. His dark eyes studied Bob Star. One lean finger was scraping at the angle of his dark jaw.

"I'm glad, Bob," he said at last, in a very slow, quiet voice, "that you've told me this. I can understand the way you feel, for once I felt not much differently." His dark eyes closed for a moment; and Bob Star saw his face as a schooled mask of tragic resignation. "But you can overcome your fear, Bob, as I did. And you must!"

"For as things are now, Bob, it may be necessary for you to kill Stephen Orco."

"You mean that, commander?" he cried. "I'd give my life for the chance!" And he muttered: "But I'm afraid—afraid I couldn't!"

Chimes rang softly, then. A door swung open, to admit once more the deep, vibrant song of the geodyne generators that drove the gigantic ship. A steward entered, in white, pushing a covered, wheeled table.

"Breakfast," he announced, saluting, "for two."

Jay Kalam silently motioned him to depart. The door closed again, and it seemed that the long, ivory-walled room was in another dimension, remote from the racing ship.

Jay Kalam ignored the table, as Bob Star asked, anxiously: "How does it come that Stephen Orco is still alive? I thought that he was executed for treason, after the revolt."

"That's what the system thinks," said Jay Kalam. "The true history of the revolt is known to only a few: your parents and myself, a few officers of the legion—and, of course, Stephen Orco. I'm going to outline it to you, now, so that you can understand the very important duty before you."

"Stephen Orco himself is a riddle," he began, as Bob Star listened intently, and the unnoticed breakfast cooled on the covered table. "The legion has spent a fortune, without learning anything about his origin."

"But I remember his parents," objected Bob Star. "They visited the academy. Stephen Orco invited the boys to a party they gave. I wasn't asked," he added, wryly, "though all my friends were."

"They are foster parents," said Jay Kalam, gravely. "His adoptive father, Edwin Orco, found him in a peculiar way. Orco was a wealthy planter; he had extensive holdings through the asteroids. His home was on Pallas."

"Nearly thirty years ago," he went on, "Orco was cruising in toward Mars in his space yacht. He and his wife had been visiting some of their plantations;



they were coming to Mars for the summer season. As it happened, they were cruising far off the usual space lanes.

"Some forty million miles off Mars, their navigator caught sight of a bright object, adrift in space. The meteor detectors had led to its discovery, but it was obviously no common meteorite. Orco's curiosity was aroused enough so that he had the vessel checked.

"The object proved to be a cylinder of magnelithium alloy, eight feet long. It had a carefully machined screw cap, which was sealed at several points with masses of black wax. Impressed upon each seal, in scarlet, was a curious symbol: It was the looped cross—the *crux ansata*, which is an ancient symbol of life—above crossed bones.

"When the cylinder had been examined, Edwin Orco wished to have it brought in through the air lock, and opened. But his wife objected. The crossed bones, she said, meant danger. The shape and dimensions of the object rather suggested a coffin, and she suggested that it might contain a corpse, dead of some dreadful contagion.

"BUT Edwin Orco was a hardy man. It was not timidity that had won his fortune, in the rougher days of the asteroid belt. And his curiosity was burning.

"In the end, he had the cylinder dragged into the air lock. Then, when no member of his crew proved willing to touch it, he sealed himself into the chamber with it. He broke the seals, and unscrewed the cap.

"The walls of the cylinder were heavy, and carefully insulated. Inside were tanks of oxygen, water, and liquid food. There were heaters, air cleaners. In brief, except for lack of power, the thing was a miniature space ship.

"In the midst of the apparatus, in a kind of cradle, was Stephen Orco.

"A red-haired tot, apparently not a

year old. He was naked, unaccompanied by any means of identification. Apparently he was never able to tell anything of his past history. Edwin Orco advertised discreetly for information, offering large rewards, but nothing was ever forthcoming.

"Stephen Orco had, as you say, an unusual power of fascination. One glimpse of the child's wide blue eyes won Edwin Orco's childless wife. The couple adopted the infant, and gave it every advantage their wealth could buy, even to securing the appointment to the academy."

"His own brilliance could have won him that," Bob Star put in, "in the competitive examinations."

"Anyhow," Jay Kalam went on, "he was graduated, as you know, with honors, and went into service. He received the rapid promotion that his unusual abilities seemed to merit. Within four years, he had his own ship. Two years later he was placed in command of the Jupiter Patrol.

"The Jovian system, you know," Jay Kalam swiftly explained, "was settled largely by exiled Purples—enemies of the democratic Green Hall. They were sent there when the empire was overthrown, two centuries ago."

"I know," said Bob Star, quietly. "My own grandfather was born on Callisto."

"Within a month after he assumed command of the Jupiter Patrol," the tall commander went on, "we began to receive ultra-wave dispatches from Stephen Orco, reporting a new uprising of the Purples. He always stated that the situation was well in hand, and requested me not to send reinforcements.

"And for two weeks we did nothing—until a band of fugitives reached Ceres in a space yacht with the amazing information that Stephen Orco was himself the guiding spirit of the revolt, and

that all the fighting had been between him and his allies, and the loyal men in the patrol. Civilian friends of the Green Hall had been systematically murdered.

"I called in every possible legion ship, from as far away as Mercury and Pallas, to the legion base on Mars."

"I recall the day," said Bob Star, springing to his feet in remembered impatience. "We heard about it, in the classrooms. I was mad to join the expedition against Stephen Orco. But they wouldn't let me go."

"When the fleet was ready, I took your mother aboard the flagship, from the Purple Hall," Jay Kalam went on. "From what the fugitives had reported of Stephen Orco, I thought it might be necessary for us to call upon AKKA."

"Our flight to the Jovian system was not opposed. All was quiet until we approached Callisto. But then a great, spinning sun of white flame burst up from the city of Lel, and came hurtling toward the fleet. It was a vortex of annihilation. Two cruisers were caught in the attraction of the terrific etheric fields that surrounded it, and sucked into its incandescent core of disintegrating atoms."

"We were not completely surprised. The fugitives had reported that Stephen Orco was erecting a new secret weapon, developed from scientific information obtained from the Medusæ of Yarkand, when the Purples under Eric Ulnar were in alliance with them."

"And this weapon, I saw, was similar to the vortex guns of the Medusæ. But the range and power of it had been vastly increased, by the genius of Stephen Orco. I perceived at once that this one weapon on Callisto threatened every planet in the system, with its bolts of atomic flame."

"YOUR MOTHER, Bob, had already assembled the little instrument of

AKKA. And, as much as I dislike wholesale destruction, I asked her then to wipe out the city of Lel."

"You have seen the instrument, Bob. And you must know that the working of it is not spectacular. I was not surprised when your mother operated it, and nothing appeared to happen. But she turned to me, with a puzzled, frightened look on her face, and whispered: "'It doesn't work!'"

"Startled and dismayed, I looked into a telescope. One glimpse showed me that Lel had not been harmed. I was able to see the vortex gun. It was a colossal skeleton tube of metal girders, set on a plateau above the city."

"Even as I looked, another whirling mass of atomic flame came up out of it. It caught three more of our ships—and the whole fleet, at the beginning, had been only ninety-seven."

"Your mother perceived at once that we had been defeated."

"'Some one,' she told me, 'has come upon the secret of AKKA. Matter and energy,' she explained, 'are phenomena of space. AKKA operates by so transforming the warp of space that they cannot exist. And the only possible barrier against its operation is a counter warp in space, created by another master of AKKA.'"

"I made her try again, although she protested that it was useless."

"'You can't adjust the weapon,' I asked her, 'to penetrate the interfering warp?'"

"'No,' she told me. 'AKKA operates upon a simple principle. It utilizes a singular instability of the universe. And any master of the principle can turn the balance the other way, to make that stability absolute.'"

"'My weapon,' she said, 'will not work again until that other master of it is dead—or at least until his instrument is taken from him, and he is prevented from getting materials for a new one.'"

"Retreat was the only course possible," the tall commander continued bleakly. "And we lost six more cruisers as we fled.

"A triumphant ultra-wave message from Stephen Orco followed us. It confirmed our assumption that he was the new master of AKKA. It demanded that the Green Hall recognize the Jovian empire, under his dictatorship, as an independent state.

"The insolent mockery of the message did not end with that. Stephen Orco demanded interplanetary concessions, apologies from the Green Hall, humiliating prerogatives throughout the system. He demanded the abolition of the legion of space.

"It was clear that he aimed at domination of the entire system."

JAY KALAM stood rigidly straight upon the great rug, amid the simple, warm-toned luxury of that great, silent room upon the racing *Invincible*. His lean jaw was grimly set. His dark eyes were flashing. And the vibrant ring coming back into his voice was the echo of battle.

"We were defeated," he said. "But not vanquished. The legion of space has never been vanquished. Remember that, Bob!"

"Yes, sir," breathed Bob Star, instinctively saluting.

"With the Purple Hall, Bob," Jay Kalam resumed, "your father had inherited the records of the first Yarkand expedition. They had been discovered among the private documents of the traitor, Adam Ulnar. From the information in those records, scanty and inaccurate as it was, we set out to duplicate the great vortex gun that Stephen Orco had set up on Callisto.

"The work of many men went into it. Your father made a brilliant contribution. I did what I was able. But it was your mother, Bob—perhaps because of

her knowledge of AKKA—who first saw the outlines of the basic problem of insuring the stability and control of the vortex, and suggested a solution.

"It is enough to say that we built, and set up on Ceres, a vortex gun fully equal to the one at Lel. The *Invincible*," he remarked, "now carries one of greater power, but that first one was too clumsy and bulky to be mounted on any ship.

"Meanwhile, Stephen Orco had been busy organizing his new empire and preparing for further conquests, without haste, believing us completely at his mercy. The successful erection of the great vortex gun on Ceres—and it ranks among the supreme achievements of the legion, Bob—was a complete surprise.

"A surprise that defeated him.

"Neither weapon could destroy the other, for each could deflect approaching vortices to a harmless distance. Stephen Orco's weapon was powerful enough, given time, to desolate every planet in the entire system—one atomic vortex shot from Callisto reduced ten thousand square miles of Mercury to smoking lava.

"But our weapon was equally powerful. And it was a simpler task to blot life from the moons of Jupiter than from the rest of the system. We should have finished first.

"Stephen Orco, as you say, Bob, is a remarkably brilliant man. He saw at once that he was defeated. He was too intelligent to carry on a clearly hopeless battle. He immediately offered to surrender, when our first shot fell on Callisto.

"He demanded, however, that we guarantee his life. He required the personal word of every member of the Green Hall, and of myself, for the legion, that we would protect his life at every cost. He made an odd exception, however, with regard to you, Bob."

Bob Star leaned forward, to ask in a

strained voice: "What was that, commander?"

"I think I recall his exact words," said Jay Kalam. "He said: 'Leave out Robert Star. He and I already have an engagement regarding my life. And if the young pup has the guts to kill me, let him do it.'"

That challenge jerked Bob Star forward. He was trembling. His lean jaws set, and his nails dug into his palms. The ragged scar upon his forehead went deathly white.

"I will!" he muttered grimly. "I will!" Then his mouth fell a little open, and he sank back into his chair, weakly mopping the sweat from his forehead.

"But I couldn't kill him, commander," he whispered. "I couldn't, if I tried! Something—there's just something that wouldn't let me."

"You will overcome that fear, Bob," said Jay Kalam, gravely. "You must." For a moment he was silent, his thin, ascetic lips firmly set. "The word of an officer in the legion has seldom been broken," he said at last. "Mine will not be broken."

"I am not going to kill Stephen Orco, Bob. I am not going to allow any other man in the legion to kill him. But since Stephen Orco made that mocking exception in your case, it is necessary for us to take advantage of it."

"UNDERSTAND, Bob, I do not command you to kill Stephen Orco. But I am going to leave you with his guard, with authority independent of the officers there, to take any action you see fit. I should dislike very much to see any man of Stephen Orco's ability needlessly killed."

"My only command is, do not let him escape."

Bob Star swallowed, and gulped hoarsely: "Yes, commander."

His arm made a jerky salute.

"It is unfortunate that we had to

promise the life of Stephen Orco," Jay Kalam added. "Your father, Bob, was opposed to making the promise. He pointed out that Stephen Orco's very life was a continual menace to the system, that at any time, with a few minutes of liberty, he could make AKKA useless once more. Enemies of the system, your father said, would try endlessly to set him free. And his uncanny genius would make him a deadly danger, in any dungeon."

"But if his terms had not been accepted, the resulting war would have cost half the human lives in the system. Even your father at last agreed that we could not pay billions of lives, for his."

"And Stephen Orco became our prisoner—the most dangerous prisoner that locks ever held."

Bob Star was staring up out of the big chair, with his lean face set and pale.

"So Stephen Orco is still alive?" his bloodless lips formed an almost soundless whisper. "And he's in prison? And he knows the secret of my mother's weapon?"

"He has been guarded as well as the legion could guard him," Jay Kalam was saying. "We announced that he had been condemned and executed for his treason—as he so well deserved to be. And in a secret place, the legion built the strongest fortress that our engineers could devise. Stephen Orco is held there, under another name. He is dead to the world outside. He is permitted no communication—not even with the members of his guard."

"To all but a few, he is dead," the commander said slowly. "But the invisible raiders from the comet have the secret."

"Eh?" exclaimed Bob Star, startled by those calm words. Stiff with numbing dismay, his fingers clutched at the arms of his chair. "How is that?"

"That's the reason, Bob, for our

alarm. That's why your father was so set upon the destruction of the comet. You see, we kept certain information about Stephen Orco, including the location of the prison, in a vault at the main legion base on Earth.

"We believed the vault impregnable. Your old guardian, Giles Habibula, helped design the elaborate system of locks. They were the best in the system. The vault was always guarded by trusted men.

"But the invisible beings from the comet slipped past the outer defenses of the base. They approached the vault, undetected. They killed four guards—hideously. They entered the vault—which Giles Habibula had said was impossible. They carried off the documents relating to Stephen Orco."

Bob Star's lean face was grimly bleak.

"If the Cometeers set him free," his dry throat rasped, "he will join them gladly. He has no loyalty to mankind. He would be eager to fight the system, to avenge his imprisonment."

"It is hard to believe that of a human being," said Jay Kalam.

"But I know it," said Bob Star, with savage emphasis. "He is a man without humanity." His voice grew faint with dread as he added: "And when he is free, my mother's weapon will be use-

less. We shall be defenseless against the science that moves the comet!"

"Still," interposed Jay Kalam gravely, "I believe that beings so far advanced as the Cometeers must be, must have developed such high qualities as mercy, magnanimity, and tolerance.

"SOON," he added, "I shall know. After we leave you at Stephen Orco's prison, the *Invincible* will drive straight for the comet. Within five days we shall be welcomed as friends—or destroyed.

"For I don't doubt that the Cometeers are capable of destroying the *Invincible*, Bob. I am simply staking the ship, and our lives, that the Cometeers will reciprocate a gesture of friendship.

"In a few hours, now, the *Invincible* will stop to leave you at Stephen Orco's prison, Bob. I don't command you to kill him. But don't let him escape. For if I lose, Bob—if the Cometeers prove to be enemies—his escape will mean the doom of the system."

Bob Star was a quivering heap, in the big chair. His thin face was a drawn mask of agony, and the ragged scar was lividly white. His tortured eyes stared at Jay Kalam, mutely pleading.

"I'll try," he whispered miserably. "But I'm afraid—afraid I can't!"

*To be Continued.*

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**PROBAK JUNIOR**

# Red Storm on Jupiter

*A story of storm-lashed wastelands  
on the biggest planet of the galaxy*

THE Law Garrison Commander's anger flamed and soared. Brighter than the bright Jovian satellites was that anger, with smoky undercurrents of resentment that smoldered like the Lake of Black Light. The commander was a little man, wiry and narrow-shouldered, but the energy that flowed from him was like an engulfing nova, shriveling the self-esteem of Evart Harnden till the tired American sagged in despair before the commander's circular chair.

"You say you were half frozen," roared the commander. "A pitiful excuse. The Foam Station Smasher was as cold as you. He had smashed two stations on the Jeel and was retiring with heavy spoils. You were unencumbered, armed with a neon rifle."

"My right foot was gangrening," protested Harnden. "I thought that by summoning help—"

"Stow the excuses, Harnden," rasped the commander. "What a Law Garrison Scout needs is guts, not thoughts."

Harnden's weather-bronzed face paled in the green glow of cold-light lamps under a dome that arched above him with as much friendliness as the dimly remembered skies of Earth. It was even studded with the familiar constellations Canis Major and his master, mighty Orion; Pegasus; and the bright, variable star Algol, whom the Arabs called Al Ghul, the demon slayer; there was the Great Dipper, too, and Cassiopeia gleaming gloriously.

But far beyond those stars were immense island universes stretching to the rim of space, glowing against un-

fathomable night and chaos. But beyond the constellations in the dome, dark clouds swirled. Clouds stifling and oppressive, composed of gases in turbulent flux that drained all the orange-and-red light from sunlight and cast a greenish aura, a sickly corpse light on the habitations of men.

The familiar constellations were, of course, not real at all. But the Earthman exiles on immense and frigid Jupiter, pursuing grim tasks five hundred million miles from the solar disk had yearned for the friendly visual "feel" of the ancient and familiar clusters—Sextans and Ursa Major, Bootes, Hercules and the Serpent, the diffuse, wavering glory of the Great Nebula.

In the four administrative domes in the settlement of Algeia, in the bright equatorial zone, projection planetariums had been erected to create an illusion of friendly skies under an atmospheric canopy that seethed and raged with a fury alien to Earth. High above the greenly glowing domes, storm-lashed clouds scudded across the sky before the awful drive of thousand-mile winds and blasts of carbonic-acid gas more lethal to human life than the poisonous fumes of the fire fungi in the south tropical zones, or the corrosive spores which filled the deserts of the fifth satellite and brought death on swift wings to man and beast.

But within the great dome shone the familiar stars. The huge planetarium projector, looking like some metal-sheathed monster from beyond the stars, cast thousands of bright points on a



by Frank Belknap Long, Jr.



*Harnden's eyes widened—then mighty energies were released within him.*

curving vault of frosted silver, etching patterns of splendor for the weary, toil-worn exiles from Earth.

Beneath the clicking, swaying blue metal projection instrument Harnden and the commander seemed pitifully inconsequential, tiny even. Harnden stood with tight lips, gazing in despair into the wrath-convulsed face of the commander. The commander was a colonist of Venus and a product of her Spartan-tempered thought academies, a rigorous disciplinarian whose immense respect for institutions and the law blinded him to the complexities of human psychology. He had no patience with any weakness, physical or mental. Even errors of judgment infuriated him.

"You are suspended for one year, Harnden," he said. "For one year more competent men will enforce law and order on the Jeel. During that period your salary will naturally cease. Have you anything set aside for living expenses?"

Harnden smiled bitterly. "No, sir, I haven't. The Law Garrison usually rewards loyalty with a pension. Sometimes I think men are quite mad to serve abstractions like justice and order. There are warmer, more human loyalties on Earth. The guardians of abstractions are not human at all."

The commander's face purpled with wrath. He half rose from his huge metal chair beneath the shadow of the droning and clicking star projector.

"Stow that, Harnden. The Foam Station Smasher is a menace to all the mining outposts, a ghastly menace. You had a chance to blast him and muffed it."

"I merely climbed back into the Jeel cruiser to signal for reserves," protested Harnden. "With my gangrened foot I knew that he would blast me before I could align the neon rifle. Luckily, I saw him first."

DESPITE his bitterness, a trace of humor crept into his eyes. "When I re-

emerged from the cruiser he saw me. He started to draw a bead on me with a flame tube, but when he saw that I was crippled he just turned around and walked away. Naturally, I couldn't blast him then."

Curiosity flamed for an instant in the commander's eyes.

"Was the Foam Station functioning all this time?"

Harnden nodded. "He was getting ready to smash it when I climbed out of the cruiser for the second time. When he saw my leg he decided not to smash it in my presence. He walked back to his own cruiser and shut the port. It was a courtesy gesture. He knew that I was going to leave."

The commander swore vehemently. Why, the whole thing was utterly insane. A law scout deliberately flying off and letting a dangerous criminal wreak his will upon property worth a fortune—a scout sworn to defend and protect colonization rights throughout all the explored zones, especially in the Jeel.

"You let a malignant killer escape just to satisfy some crazy, irrational code of your own," exclaimed the commander furiously. "Why didn't you go a step further and compliment him on his achievements?"

"You cannot align a neon rifle swiftly unless you bring your foot to bear on the pedal," said Harnden, with grim patience. "He had me covered. He could have blasted me before I was in a position to impress him with theories of law and order. He may be a killer, but he is also a man of honor."

"A quixotic, mad code," muttered the commander. But now a certain faint admiration seemed to temper his anger. "Tell me, what will you do for a living? Will you go out into the Jeel?"

Harnden nodded. "It is the only thing I am fitted for," he said. "I know the Jeel. The life of a Jeel miner is brief, three months perhaps. But if I

strike a rich vein before the radium gets into my bones I will purchase passage back to Earth. I haven't seen Earth since I was knee high to a grasshopper. I'll stay there a couple of months and come back on the new Trans-Saturnian transport, *Everest*, which is scheduled to leave Earth in the spring of 2002."

"And report for reassignment?" asked the commander.

Harnden nodded.

The commissioner rose slowly. Re-sentment still flushed his cheeks and smoldered in his gaze. But, paradoxically, deliberately, he extended his hand.

"Officially your conduct merits the severest censure," he said. "But—oh well, good luck to you on the Jeel."

HARDEN wondered if he was going mad. Above him immense red clouds billowed and changed shape before the impact of winds that ripped and tore at their ragged edges. Raging with the fury of freak gales in the Earth's upper atmosphere, they divided the gaseous envelope of mighty Jupiter into banners of lurid flame, into crescents and swirling spirals of scarlet.

Some of the stupendous, pulsing bands were the deep-red color of freshly turned loam, some as black as clotted blood. Others verged toward the red at the extremity of the visible spectrum, wavered for a moment in tenuous pulsations and vanished into a vast vortex of infra-light. A few showed iridescent and rainbow-hued, a few blinding-green—flashes of brilliant alien color in the all-engulfing ocean of radiance.

For thirty thousand miles this immense and seething caldron of heavy gases and lacerated clouds rotated at variance with the planet's crust, slowed in some areas by vertical convections and in others by fierce horizontal pressure drifts of inconstant magnitude.

Far back in the early twentieth century the astronomers of Earth had called this raging scarlet ellipsoid the

Great Red Spot. Its amazing instability had baffled the wisest of terrestrial scientists until the first of the trans-Saturnian space transports had penetrated the atmospheric blanket of the enshrouded planet and discovered the curious nature of the soil beneath.

Although Jupiter was utterly without internal heat its crust was strangely elastic, almost fluid in texture. The mass of the majestic planet was concentrated heavily toward its center, but there was extreme variability in the softness of its outer crust. In some of the belts and zones the surface was a kind of jellified sea which heaved turbulently when the great cyclones which often raged for months at a time ripped and tore at it.

Beneath the Great Red Spot the crust was a turgid, slowly streaming mass of magnetically energized emulsion. This vast region, known as the Jeel, exerted an intense magnetic attraction toward the chemical constituents in the Jovian atmosphere which absorbed sunlight in orange and red. But the precise nature of these constituents, and of the heavy, emulsive substance which formed the crust eluded the researches of all the chemists of Venus, Mercury and Earth.

The alien emulsion contained elements which evaporated slowly in bright sunlight, and a body of molecules which flew apart and became highly volatile gases when exposed to temperatures a little in excess of the radiating layers in the planet's atmosphere.

On the storm-lashed, desolate Jeel, fifty thousand miles from the Jovian outposts of his kind, Harnden lifted his eyes and gazed upward at the blinding, scarlet conflux that filled all space above him.

Nearly four hundred million miles away his midget homeland turned: warm blue seas and green fields; treetops that bent in the brief gales of April; silver larks a-winging; and in cool, deep woods, quiet pools and rest after toil;

white and rose-colored daisies in country lanes; and the solace of dear, familiar faces; the horns of elfland faintly blowing—nearly four hundred million miles away across black gulfs of space.

On the Jeel, the desolation closed about him like a wet shroud, filling him with loneliness and terror, wrapping his brain in vapors. The storm which was raging above him was the worst in his experience. He was not even sure that the Foam Station would remain stable and afloat, that his small cruiser could outride the tempest.

Outside the quiet circle of streaming liquescence on which he stood in his cumbersome oxygen suit, the raging atmosphere piled the surface of the Jeel into vast waves that broke and curled in creaming menace hundreds of feet above his head. All about that small, artificial sanctuary was tumult and chaos.

THE little space cruiser floated serenely in sluggishly moving currents. The circle of serenity was two hundred feet in diameter. In its gleaming center the immense shining bulk of the Foam Station towered beneath red, ragged clouds. From the continuously revolving sprayer at the station's summit a pale, silvery vapor descended.

Falling on the emulsive surface it spread out in swiftly widening circles. The circles stilled the little waves that were constantly arising within the area of quiescence. Harden knew that if the sprayer mechanism jammed for a single instant, or if the raging storm above carried away the summit of the station the little waves would increase in height and bulk, would swiftly grow to giant dimensions. Only the descending silvery vapor stilled the waves as they sought communion in a seething maelstrom.

Potentially the maelstrom was there, crouching like an irate, bottled jinni under the turgid surface of the gale-encircled sanctuary.

As the sprayed fluid spread, the long,

furious tongues of the gale licked in vain at the protected surface. The wind could get no grip on the liquid. From the spreading silver circles it was repulsed with a long-drawn, souging sigh that was the only reassuring sound in all that red inferno.

The mechanical principles underlying that continuous repulsion were as effective as they were simple. The upper surface of the sprayed fluid was formed of the inert ends of long-chain molecules. As it spread over the unstable Jovian "crust" it presented a surface as polished as a mirror. When the gaseous tongues of the gale whipped across that surface they recoiled as the fierce winds of Earth recoil from oil film on water. The Foam Station Sprayer stilled the Jovian currents and repulsed the air that sought to whip them into huge waves.

The Foam Sprayers were mining innovations. All the ingenuity and resourcefulness of the outpost engineers had been marshaled by the Jupiter Radium Mining Syndicate to assist in the erection and distribution of the great towers over ten thousand miles of the Jovian Jeel.

Enormous atmosphere transports had carried them to radium-rich veins under the red heavens, and intrepid Earthman—dredgers and miners—had operated them in ghastly loneliness of spirit in a world where human beings moved with the slowness of exhaustion, incased in protective suits that weighed two hundred pounds, and wearing upon their feet immense shoes that mushroomed on the surface that was neither liquid nor solid, but an amalgam alien to Earth.

Miners and dredgers. Both terms were in a sense misnomers. The sluggish, heavy tides of the Jeel's crust solidified in spots to a consistency that merited the adjective "solid," and it was in such curdled areas that the radium deposits clustered like glowworms about a central matrix whose every pulse was

worth a fortune in gold and diamonds.

But even in the liquid areas the deposits were numerous, and the search for them profitable. But whether a man who warred with death for profit on the Jeel was a miner or a dredger was a problem which Harnden had left unsolved, contenting himself with varying his *modus operandi* when the need arose.

He wondered if he was going mad. Looking at the roaring crimson gases and the lashed clouds he felt suddenly as though the skies were about to descend and engulf him, as though the stupendous, and lurid heavens would no longer tolerate an intruder as terribly lost, and frightened and insignificant as himself.

He was a speck of throbbing life, a blob of consciousness and alien matter on a world so big that even immense Saturn and majestic Uranus seemed entirely dwarfed by its mere presence in the solar family; while its numerous moons, which approximated planets in size, looked like tiny fly specks in the firmament above it.

He had been dredging continuously for three hours. In a non-conductive belt which encircled his massive oxygen suit the garnering of his day's toil emitted radioactive emanations capable of destroying life on all the Jovian outposts, actinic rays more deadly than the most lethal salts and corrosive acids. On Earth radium was the rarest of known elements and had to be patiently isolated from tons of uranium residues. But on Jupiter radium existed in a free state in the turgid, semiliquid crust area.

Harnden's nerves shrieked warnings, protested that it was time to quit. The brief, ten-hour Jovian day was drawing to a close amidst such a plethora of brightness that it seemed to be just beginning. Harnden turned slowly about on his huge flattened shoes, and moved toward the little atmosphere transport which floated in the shadow of the

Foam Station a few feet from where he was standing.

The turgid substance beneath him was unimaginably queer. The immense surfaces of Harnden's shoes plopped across it, sinking through the spreading scum from the sprayer, but making only slight depressions, which immediately filled, in the basic substance of the Jeel. By ultimate analysis, it was perhaps more solid than liquid. But it was sufficiently liquid to rear into huge waves, cones and pinnacles of seething menace when the sprayer ceased to function.

WITHIN the little space transport which had brought Harnden to the Foam Station across five thousand miles of storm-whipped Jeel, through billowing masses of cloud as red as the heart of a ruby, there were replenishments which his body craved, solaces for his jangled and tormented nerves. Food and water, peace after toil, the illusion of security—security and perfect quiet.

He would remove his hideously heavy space suit, strip to the buff, refresh himself with a cool shower from the sprayer in the air-conditioned relaxation chamber in the stern of the vessel. He would drink at least a quart of water, sink his teeth into ripe and luscious fruit. He would don a lounge suit, slippers. He would light his friendliest pipe. He would tune in on the televisual broadcast from Alpha City the largest of the Jovian outposts.

He would forget the red storm completely, the horrible menace of splitting clouds and gases that uplifted in awful rage like beasts of the Apocalypse. He would spew the images from his mind, relax, forget. The air-lock portal of the little transport glimmered with a brightness as of splintered mica a few feet from the quartz eyes of his cylindrical helmet. A deep feeling of relief was sweeping over him when a tubular, high-altitude transport whirled with

appalling suddenness through rifts in the red inferno above, and swooped down upon the gale-lashed Foam Station.

In sudden alarm Harnden jerked his head backward. As the long cylinder at the summit of his oxygen suit slanted, a cold-blue searchlight from the descending atmosphere cruiser broke over it in shimmering waves. Harnden's eyes widened behind the quartz as the blinding light swept over him; his jaw sagged. Then mighty energies were released within him.

The Foam Station Smasher traveled in a high-altitude cruiser and discredibly descended like a bolt from the red. With fiendish and irrational malice he swooped down upon the Foam Stations, splitting them with detonation bombs into glowing fragments. Harnden knew himself to be standing in the shadow of oblivion and a monstrous death.

Down upon the raging Jeel in swift loops, the menacing ship descended. Bristling with rugged armaments; its tapering rocket ejectors belching smoke and flame, its aerial torpedo and bomb tubes yawning ominously in its corrugated stern, it circled twice about the summit of the Foam Sprayer and hovered for an instant directly over the little grotesquely incased figure on the slowly streaming crust beneath.

Then it descended. With a deafening roar it jerked sideways until it was clear of Harnden's little ship and settled down on the unstable Jeel. The great circular searchlight that projected from its bow dimmed, went dark. The interior throbbing diminished in volume and intensity until the great bulk rested without vibrations on the turgid circle covered by the silvery spray of the slowly revolving Foam Station. The semiliquid crust bubbled a little beneath its enormous weight and the heat which emanated from its basal plates. A crackling filled the air as the huge plates cooled.

Harnden didn't wait for the air lock

to open. His blast pistol was no longer in its customary berth beneath his right arm. His thin gloved fingers curled about the firing lever of the heavy little weapon as he advanced upon the transport. No cumbersome neon gun requiring knee pedaling would defeat justice this time.

He was grimly cool. He knew that the Foam Station Smasher would blast as soon as the port opened. He was grimly determined to blast first. He was trembling a little, but not in fright. Killing could never be a casual matter to him, not even when he blasted in the line of duty. And the Foam Station Smasher was not as inhuman and merciless as the sanguinary bandits who slew agents of the company about the rim of the Black Lake in the south equatorial belt, or the vile harpies who waylaid the immense transports from Venus and Mars and set them adrift in etheric vortices between the chartered spaceways.

ABOUT the circular rim of the air-lock port a thin ribbon of light glowed. Harnden's fingers tightened about the firing lever and his face hardened. Slowly the portal opened on a world that seemed a-gleam with blood. Limned in the light-encircled aperture Harnden saw a small, clumsily clad form that wavered. The Foam Station Smasher was six feet tall, broad of shoulder. This little form could not be—

Abruptly the form fell forward with extended arms, collapsed in a headlong sprawl on the turgid Jeel. For one brief instant Harnden remained immobile; his body tensed in cautious suspicion. Then he thrust his blast pistol back into its holster, clumped toward the prostrate form.

His immense shoes left phantasmal tracks of vivid red, tracks that quickly vanished as he moved across the sluggishly streaming, diluent crust. The fallen figure stirred a little; its gleaming



oxygen helmet wavered slowly at it attempted feebly to rise. Harnden's strenuous breathing had clouded the quartz window of his own helmet. He saw the little form through a nebulous haze as he bent above it.

His gloved hands went beneath trembling shoulders, and lifted upward a body that seemed to protest a little. Whoever was within that gleaming caricature suit was darned plucky, at any rate. Wanted to walk all by himself over a surface as unstable and slippery as the jellied estuaries of the Black Lake, to walk without Jeel shoes.

A terrible danger in that, if the poor, deluded fool had but known. Without Jeel shoes a man would be mired. He would sink in up to his knees, his waist. And, more awful to contemplate, his feet might touch a radium deposit. Radium could only be handled with protective gloves.

Harnden tightened his grip on the feebly protesting stranger. Luckily, he was frail and weak. It was shameful that the company should have sent such a fragile individual out into the storm-lashed Jeel. Official callousness, brutality. Damn all officials anyway. Damn the insane cupidity that sent men to risk their necks under heavens like these.

Being weak, the little figure offered no dangerous resistance. Harnden supported him to the port of his little space transport, held him in a tight, protective grip while he manipulated the air locks. Light appeared about the rim of the port; slowly it opened on the raging Jeel.

Harnden dragged the figure relentlessly within the vessel, swung back the lever which closed the port. The air locks functioned with a low, vibrant humming. Within, cold light lamps emitted a greenish radiance. The basal reception chamber beyond the air locks was small and low-ceilinged. A mushroom-shaped mass of metal usurped the

central section of the little cubicle. This mass comprised the lowermost unit or segment of a huge stabilizing shaft which ran from the base to the summit of the vessel. About its margin the metal mushroom was studded with circular depressions sufficiently spacious to accommodate sitting figures.

Harnden lifted the small form into one of these indented seats and hastily attacked the bolts of the cylindrical oxygen helmet. He was conscious of a certain friendliness emanating from the person within the immense suit. The eyes that stared out at him were certainly friendly. They stared at him with an intensity that was somehow disturbing.

WITH a wrench he lifted the helmet from shoulders. Instantly the little chamber was transformed by the emergence of a glory which stunned him. It was as though the red heavens of the Jeel had opened and flooded the desolate Jovian world with a radiant and celestial loveliness.

Her hair was as vividly red as the storm-lashed clouds without. Her eyes were bewitching blue pools radiating sympathy, warmth and sweetness. Her mouth was perhaps a trifle too firm-lipped, but Harnden thought it was the most beautiful mouth he had ever seen. The great beauty which emanated from her soothed the weariness of his mind and heart, brought healing, and wondrous solace.

He stood for an instant staring at her in incredulous awe, scarcely daring to breathe.

"Don't look so startled," she exclaimed, smiling. "You'd think I was the only woman on the Jeel. Some of you can go it alone, but—well, some of you just can't. One fourth of the company's men are married. The loneliness is pretty awful, you know."

"Then you're a wife of—one of the miners?" stammered Harnden.

The girl shook her head. Her eyes clouded. "My brother operated a Foam Station on the Jeel for two years. When he died I asked to be sent out in his place. I am——" She checked herself. "I was the only operator of my sex on the Jeel."

"Good Lord!" exclaimed Harnden.

"Don't look so startled. It isn't such physically exhausting work. It's the terrible loneliness that makes you want to crawl into a corner and die. Sometimes I think women can stand the mental gaff better than men. We're weaker physically, but more resistant in the long run."

"I'd like to choke the company man who sent you out here," muttered Harnden. "The Jeel is no place for women, married or single."

"I stood it pretty well," she affirmed. "I mined so much radium in six months that the commission would have made me rich for life."

"What do you want to be rich for?" demanded Harnden. "With your looks you could marry the president of the Trans-Saturnian."

"I don't think I'd like that," said the girl, a little angrily. "I've always been independent and——"

"I know, but look what it's got you. That blasted storm has blown your Foam Station off the planet. You'd be with it if the company hadn't let you have a big armored cruiser instead of a little scallop shell. I don't know why they let you have the cruiser. They've only got a couple of ships capable of outriding this storm."

The girl's lips curled in ironic mirth. "A man would jump to conclusions as crazy as that. Why didn't you ask me? The storm didn't blow the station down and I didn't have a cruiser. The Foam Station Smasher had the cruiser. Now

I've got the cruiser and he's got the little scallop shell."

Harnden's jaw fell open. The astonishment that leaped into his eyes spread outward till it engulfed his features.

She felt a little sorry for him then. She said: "I didn't mean to shock you like that. But you made me angry. The Foam Station Smasher didn't know, at first, that I was a girl. I was inside my little transport eating lunch when he swooped down out of the sky. I heard the whine of his cruiser through the gravity ports."

HARDEN recovered slowly from his amazement. Her words had the ring of truth, but somehow this thing was incredible. This slim frail little girl, a mere child, had somehow captured the great armored cruiser of the Foam Station Smasher, had piloted it through the worst storm that had ever lashed the company's scattered stations.

"He dropped a detonator on the foam sprayer," she said. "It was blasted to glowing fragments. The concussion shook the Jeel; threw me across the chamber of my—my little scallop shell. I smashed into a corner; the table overturned, and smashed down on top of me, spilling eggs, milk and honey all over my lounge smock."

"I thought, of course, that the storm had torn the sprayer from its moorings. The whine of the cruiser I attributed to the gale. I got unsteadily to my feet and descended by the ladder from the central chamber to the air-lock chamber, dragged my oxygen suit from the locker."

"I should have ascended from the central chamber to the pilot chamber and blasted out the propulsion jets. Company's orders, you know. If the sprayer goes, everything goes. The little waves rise into mountains, as you know. They tell us to explode rockets when that happens, get away before we're swamped."

"Yes," said Harnden. "But a woman wouldn't."

"I never got into a worse tangle with my suit. I couldn't seem to get in or out of it. I was still struggling with it when I heard the air locks begin to sing. You know how they sing a minute before they begin to drone.

"I stopped trying to get into the suit. My heart began a furious pounding. I knew that some one was working the air locks from the outside.

"He came in with his helmet on and a neon gun in his hand. He was massive, six feet four or five. He kept the neon gun leveled all the time he was in the chamber. I could see his eyes clearly behind the quartz in his helmet. They bored into mine.

"The surprise in them showed through the quartz. The fact that I was a woman seemed to disturb him beyond reason. I saw the surprise slowly change to something else. Something ugly, terrible. To a certain sort of woman it wouldn't have seemed terrible, but to me——"

"I understand," said Harnden.

"I was so frightened I couldn't move."

Harnden looked at her steadily. He wondered just how frightened she had been. She was a cool one, that child, more self-possessed than most men. She had beauty and she had brains. The combination was usually a dead one.

"I didn't move," she resumed. "How long I stood there staring I do not know. I could see that he wanted to speak to me. He started unscrewing his helmet."

"You were both in ghastly danger," said Harnden. "When the Foam Sprayer goes the waves usually rise within ten or fifteen minutes. That he should have risked removing his helmet seems incredible."

"It was sheer lunacy," said the girl. "He should have forced me to surrender

all the radium I had mined, should have smashed all the dials in the pilot chamber. They say he is a killer, ruthless. He should have returned swiftly with his spoils to his own cruiser. But he didn't. He didn't at all. He took off his helmet, and—and swept me into his arms. He *kissed me*."

An angry flush suffused the girl's cheeks. She bit her nether lip as she recalled the indignity.

"As soon as he set me down I backed away from him until I collided with a heavy jeel pick which was resting against the base of the central shaft. I kept all of my mining paraphernalia in the air-lock chamber. As soon as my right hand touched the cold metal I knew I was going to win the grim game we both were playing.

"I didn't hit him with the end of the pick. I simply seized the end of the pick and hit him with the heavy, blunt handle. I didn't want to kill him, but I hit him hard.

"I hit him on the head. He went down like a lodestone. I hit him so suddenly he didn't even know he'd been hit. One minute he was looking at me and the next he was lying on the floor at my feet.

"I lost my head completely then. I knew I had to get out of my little scallop shell and into the Foam Station Smasher's big cruiser. I had enough presence of mind left to put on my helmet and clamp the fastenings into place. I knew that the little transport would never outride the storm, but I might have a chance if I could cross the Foam Station circle to the big one, before the Jeel heaved up. But I was so frightened and hysterical I forgot my Jeel shoes. I crossed from my ship to the big ship without them. Twice I sank in up to my knees, floundered. It was a ghastly experience."

Harnden stared at her admiringly. "Call it a miracle," he said.

"I only weigh ninety-seven pounds," said the girl. "A man your size without shoes would have left his bones to whiten in the Jeel. But my lack of poundage didn't help when I got inside the Foam Station Smasher's cruiser, and tried to turn the wheel of the gravity neutralizer. It was a terribly big wheel."

"But you were up to it eventually," said Harnden. "Otherwise you wouldn't be here at all. Good girl."

She smiled. "I do deserve a little praise," she said. "And sympathy. Bushel baskets of sympathy. You see, flying isn't my specialty. I've piloted several little scallop shells into the red, but never a big armored cruiser. I went up dangerously high—fifty thousand feet. The sky looked like a huge, bleeding wound. I cried. I slapped my face to keep awake. I cried like a little girl."

"Luckily this station was still functioning," said Harnden. "There's only Joc Maalen's station between here and Alpha City. You'd never have made Alpha City in this gale. Perhaps my station will be ripped to shreds. I don't know. If the sprayer goes we'll try to get to Maalen's station in the cruiser."

THE GIRL'S FACE was only a few inches from his. He thought of the Foam Station Smasher, of the black-guard's insufferable audacity. Her blue eyes were warm, terribly friendly. He wondered if a swift, sudden kiss would be so violently resented.

"You haven't told me your name," he said. "What is your name?"

"Wileen," she said. "Wileen Jalicorl."

"That is not an Earth name," said a voice beside them. "Were you born on Earth?"

Harnden felt his scalp prickle. He was staring into the girl's face, but

when the voice spoke out of the empty air surprise and terror jerked his head about with a terrible suddenness.

A few feet from where the girl was sitting a tall shape was materializing in the green shadows cast by the massive central pillar. It was assuming form and substance jerkily, unevenly. Legs incased in the baggy folds of an oxygen suit came into view first, then a wrinkled waistline distended by a heavy radium belt, then high above the belt a face grim and pale and angry, with eyes that somberly transfixed Harnden and his companion.

Slowly the space beneath the white face filled. Frozen into terrified immobility the man and the woman saw massive shoulders grimly erect in the green gloom. Objects related to the figure leaped into visibility—a gleaming helmet resting firmly on the floor beside a huge Jeel shoe, a tiny positron blast tube, no bigger than Harnden's thumb, a molecule replacement lamp rimmed with black light.

The little blast tube, which was pointed directly at Harnden's chest, was held in gloved digits. In the center of the Foam Station Smasher's breast the molecule replacement lamp which had cloaked his tall form in an impenetrable screen of light-refracting energy gleamed with pulsing radiance as it cooled and crackled.

The woman spoke first. "I thought I had killed you," she said, her voice rising in sudden hysteria. "Are you alive, or dead? Did you come through the walls?"

The Foam Station Smasher smiled grimly, bitterly. "It is not your fault that I am not dead," he said. "You struck with vigor. But women are incurable sentimentalists. They defend themselves with blunt instruments, and dread the spectacle of splintered skulls. I am very much alive, girl."

His eyes gleamed darkly. "I did not

come through the walls. I am not an apparition. I entered this vessel by the stern emergency air locks, and descended quietly, cautiously, like a monkey."

He nodded in the direction of the thin metal ladder which led from the air-lock chamber to the chambers and corridors above. "Naturally I preferred to wear a molecule replacement lamp. The faint green glow which the energy screen emits was indistinguishable from the air in this green light. My cruiser is lighted with blue lamps."

His lips curled in derisive anger. "I have been quietly standing here, watching you. Apparently you do not like me. I kissed you and you tried to kill me. To-morrow I will kiss you again. Up in the flaming skies I will convince you that I am not such a clumsy lover."

Harnden started toward him with a smothered oath. The little blast tube leaped in the Foam Station Smasher's hand. A long tongue of black flame shot across the chamber, searing Harnden's cheek, setting up a brief, curious vibration in the metal of the central pillar. Harnden ducked swiftly and then hurled his body fiercely forward in a flying tackle.

HE CAUGHT the Foam Station Smasher about the knees, his arms and shoulders quivering with the momentum of bunched muscles. The Foam Station Smasher's feet flew from under him and he crashed over backward with a startled oath. His massive, suit-enveloped body hit the floor with such violence that the chamber shook.

Harnden was a hard, firm-muscled veteran of the Jeel. He had served the law in the lonely Jovian outposts for a decade. But the Foam Station Smasher was a mountain of vigorous brawn. Every inch of him was dangerous.

The fact that Harnden had sent him sprawling meant little. He simply

threw out one immense arm, and curled it about Harnden's torso. He could have broken all of Harnden's ribs swiftly and almost effortlessly with his gloved hands, but he preferred to kill quickly.

Harnden writhed in the grip of a mighty, one-arm hug. Frantically he raised his fist and smashed it into the big man's face. The Foam Station Smasher simply smiled grimly with encrimsoned lips and increased the awful pressure on his antagonist's stomach, lungs and backbone.

He had a wiry resistant strength, impossible to combat. Harnden felt a stabbing agony in his chest. Pain radiated outward in pulsing waves from his spine, snaked down his arms to his hands. His perceptions began to waver, and dim. Faintly, as darkness came sweeping down upon him, he heard the girl Wileen sobbing, heard the Foam Station Smasher's contemptuous laugh.

The laugh seemed to come from an immeasurable distance, from somewhere far beyond the confines of the chamber. The laugh swelled suddenly into a jeering cacophony, filling all space, reverberating across the black, interstellar gulfs. Down these gulfs his body spun, dizzily, with the speed of light.

When he came back to consciousness there was no longer any pressure on his limbs. The pain had vanished completely. He lay for a moment without motion, wondering why the black gulfs had spurned him. Then his perceptions sharpened, anxieties which had lain comatose quickened into vivid life.

He heard the girl Wileen murmuring, over and over: "I must kill him. I must kill him now. I must kill him. I must kill him now."

WITH a painful effort Evart Harnden sat up. The chamber about him seemed remote and insubstantial, a vortex of glimmering light and fantastic,

dancing shadows. The walls drew swiftly toward him, then retreated. He saw a moving figure amidst the glimmer, and shifting movements. Backward and forward before his vision the figure moved.

"I must kill him. I must kill him now," reiterated Wileen as she paced the chamber, white-faced, ready to faint.

Harnden's senses cleared. His vision grew sharp, distinct. He saw the crumpled, convulsively writhing form lying on the floor a few feet from the base of the stabilizing shaft. A great shudder ran over it; the face went whiter than the face of the pacing girl.

The black, armored cruiser roared through the red skies, its rocket jets belching smoke and flame. Fifty thousand miles above the slowly streaming crust it pierced the immense clouds in an ecstasy of flight.

The great storm was over. But far below on the desolate Jeel, Foam Stations still flashed warnings, and Alpha City was ablaze with emergency lights.

The girl Wileen sat very still on an immense sloping wheel within the pilot chamber of the great vessel, staring dreamily at the rapidly shifting cloud masses in the location finder, which spread fanwise above Harnden's stooped shoulders. Harnden was sitting in an elevated metal chair a few feet away.

"I would have killed him," said

Wileen suddenly. "If he had not died I would have shot him with a positron tube. It is curious how I had nothing but compassion for him at the end. Why is it that women are so smug and self-righteous until some poor devil gets smashed up. Then we are all compassion. It is really very strange."

"He was a lonely man," said Harnden. "Ruthless and cruel but not without honor. He spared my life once on the Jeel. I shall always remember that."

The girl's face clouded. "I suppose it was his immense covetousness that destroyed him," she said. "He put more radium in one belt than five belts could hold with safety. I shall never forget the terror which came into his eyes when the belt burst."

Harnden straightened in his chair, swung about until he was facing her. "You must try not to think of that," he said. "You must get some sleep. I won't even speak to you again until you've rested up a bit."

She looked at him steadily. "Evart Harnden," she said, "suspense is bad for the nervous system. Why don't you tell me that you're in love with me. A girl likes to be told."

Harnden descended from his chair so swiftly that Wileen feared that he would slip and fall. As he came toward her across the pilot chamber her face was radiant and strangely tender.



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The illustration features a cowboy on a bucking horse on the left, a can of Pabst Export Beer on the right, and a tall glass of beer with a head of foam below the can. A line connects the cowboy's lasso to the can. At the bottom right, there is a small copyright notice: © 1936, P-F Corp.





*"It's simple, when you know the answer, to see how true  
was their every claim."*

# Elimination

by Don A.  
Stuart

*A tale of supreme science  
and of its trail of madness*

**J**OHN GRANTLAND looked across at his old friend's son intently and unhappily. Finally he sighed heavily and leaned back in his swivel chair. He lighted his pipe thoughtfully. Two slow puffs of smoke rose before he spoke.

"I'm a patent attorney, Dwight Ed-

wards, and I'm at your disposal, as such, to do your bidding and help you to secure that patent you want. As you know, I'm also a civil-and-commercial-law expert of some standing in connection with that work. I can get that patent; I know it is patentable and unpatented as yet. But before I start pro-

ceedings, I have to tell you something, Dwight.

"You have enough to live on the rest of your life, a brilliant mind to increase it, a scientific ability to keep you occupied and useful to the world. This invention is not useful to the world. If you were a poor man, I would not hesitate in making the patent applications, because some wiser men, with more money, would buy it up and destroy the thing. But you aren't poor, and you would hold out till the thing was developed and going."

"But—but Mr. Grantland, it's a thing the world needs! We have a fast-vanishing gasoline reserve—a coal supply being drawn on endlessly and recklessly—we need a new source of power, something to make the immense water-power supplies in inaccessible regions available. This system would do that, and conserve those vanishing resources, run automobiles, planes, even small factories and homes——"

"It would destroy our greatest resource, the financial structure of the nation. A resource is not a resource unless it is available, and only the system makes it available. The system is more valuable, more important to human happiness than any other resource, because it makes all others available:

"I know your natural desire, to develop and spread that system for canning and distributing electricity. It's a great invention. But——"

"But," the younger man said somewhat bitterly, "you feel that any really great, any important invention should be destroyed. There must be, you are saying, no real improvement, only little gadgets. There must be no Faradays who discover principles, only Sam Browns who invent new can openers and better mousetraps."

Grantland laid down his pipe and leaned back in his chair silently.

Bitterly, the younger man was gathering his papers.

"Dwight," said Grantland at length, "I think I'll do best if I tell you of one invention that I have in my files here. I have shown these papers to just one other man than the men who made them. Curiously, he was your father. He——"

"My father? But he was not an inventor—he was a psychiatrist, utterly uninterested——"

"He was vitally interested in this. He saw the apparatus they made, and he helped me dismantle it, secretly, and destroy the tube Hugh Kerry and Robert Darnell made. That was twenty-two years ago, and it was something of a miracle I had, at the age of thirty-six, the sense to do that.

"I'm going to tell you mighty vague things and mighty vague principles, because you're too keen. It isn't very safe to tell you this, but I believe you will keep a promise. You must swear two things before I tell you the story: First, that you will not put that surprisingly acute mind of yours to work on what I say, because I cannot tell what clues I may give. I understood too little to know how much I understood; Second, of course, that you will not spread this unpleasant story."

THE YOUNG MAN put down his papers, looked curiously at John Grantland. "I agree to that, Mr. Grantland."

Grantland stuffed his pipe thoughtfully in silence. "Hugh Kerry and Bob Darnell were one of those fortuitous miracles, where the right combination came together. Hugh Kerry was the greatest mathematician the world has seen, at thirty-two."

"I have heard of him; I've used his analytical methods. He died at thirty-three, didn't he?"

"I know," said Grantland. "The point is—so did Bob Darnell. Bob Darnell was something like Edison, on a higher level. Edison could translate theory into metal and glass and matter.

Darnell could do that, but he didn't work with steel and copper and glass. He worked with atoms and electrons and radiation as familiarly as Edison worked with metal. And Darnell didn't work from theory; he worked from mathematics that no theory could be defined for.

"That was the pair the shifting probabilities of space time brought together—and separated. You've never heard of Darnell, because he did only one thing, and that one thing is on paper there, in that steel vault. In the first place, it is in a code that is burned into my memory, and not on paper. In the second place, it is safe because every equation in it is wrong, because we couldn't code equations easily, and the book that gave them right is out of print, forgotten.

"They came into my office first because they lived near by, and I'd gone to the same school. I hadn't much of a reputation then, of course. That was when you were just about getting into the sixth grade, Dwight—a good number of years ago.

"They had the tube then. They called it the PTW tube—Probability Time Wave. They'd been trying to make a television set that would send through walls—a device that would send out its own signals and receive them back as images.

"They went wrong, something about trying for the fourth-dimensional approach and slipping into a higher dimension. They said that Einstein's curved space theory was wrong, and it was the ten-dimensional multiple theory that was right.

"But you said something about Faradays and Sam Browns. That invention I suppressed was something so enormous, Dwight, that anything that ever has or ever will be invented is picayunish squabbling beside it. It was the greatest tower looming on the road of

progress. It loomed above all other things as the sun looms greater than earth. It was the greatest thing that ever was or will be, because it necessarily incorporated the discovery of everything that ever will be or can be."

"What—what could be so great? The power of the atom——"

"That was one of the lesser things it incorporated, Dwight. It would have meant that, in a year or so, and the secret of gravity, of interplanetary, interstellar flight, the conquest of age, and eternal life. Everything you can dream of John, and all the things that any man ever will dream of.

"They knew all that when they came to me. They explained it all, and because I couldn't believe—they showed me. You cannot conceive of such a thing—anything—so inconceivably far reaching in scope? I'm not surprised. They told me what I have told you, and but that they said it all in such quiet, assured voices, with such perfect and absolute confidence, I'd have called them liars and put it down to the vain boasting of the Sam Brown you mentioned, with his mighty new mousetrap and his miraculous can opener—the invention of the ages.

"It's simple when you know the answer, to see how true was their every claim. Their television slipped. It slipped aside, into some higher dimension, they guessed, and instead of penetrating the walls and the buildings through that fourth dimension they sought, they decided it had slipped out and beyond space and time, and looked back to review it, a mighty pageant of incredible history—the history that was to be.

"YOU SEE, in that was the incredible and infinite scope of the thing, because it showed, in the past, all that had been, the infinite sweep and march of all time from the creation to the present.

"But then the ordered ranks broke, for, from the present to the other end of infinity, no single thing or any circumstance is immutably fixed. Their PTW cube caught and displayed every possibility that was ever to exist. And somewhere in that vast sweep of probability, every possible thing existed. Somewhere, the wildest dream of the wildest optimist was, and became fact.

"On that screen tube I saw the sun born, and on it I saw the sun die a million deaths. I saw them move planets, and I saw the planets moving in birth. I saw life created, and I saw it created again in test tubes and laboratories. I saw man arise—and I saw men and women more perfect in body and mind than the dream of Praxiteles created from acetylene and ammonia. Because somewhere in the realms of possibility, remote or so near as to be probable, those dreams of every scientist came true, and with them, the unguessed dreams of unguessable intellects.

"Hugh Kerry and Bob Darnell came to me when the thing was new, and they faintly conceived of its possibilities. That was in 1937. And in five days the world would have known and been at their feet—but for two things—three, really. First, because the thing, they knew, was imperfect, and, what they didn't know, was severely limited; Second, because they had begun to trace their own life tracks, and were worried, even then. I caught some of that worry from them and held back. I never let them cast for my life tracks. To-day I do not know what will come to-morrow; Third, and what was perhaps the determining reason, they were still poor, but growing rich rapidly by the information that machine brought them of the little, everyday things that were to be two days ahead.

"You could pile up an enormous fortune, Dwight, if you just knew with a probability of eighty-five on their scale

of a hundred, what to-morrow and to-morrow would bring. They did, and first the number pool hated them and refused their business, then the betting rings refused their bets, and, finally, even the stock market began to act unfavorably. Because they won, of course.

"But before then, they had begun to forget that, and concentrated on the life tracks the machine showed them.

"I said the machine was limited. It was limited by two factors: one was the obvious difficulty of seeing the forest and the shape of the forest when in the middle of it. They were in the middle of the parade, and there they must stay. They could not see the near future clearly, for the near forest was hidden by the trees. The far future they could see like a vast marching column that split and diverged slowly. They saw no individual figure, only the blended mass of the march to infinity.

"At a year, the parade began to blend, and the features were lost by the establishment of the trend. But, at two days, two weeks, their screen showed a figure blurred and broken by the splitting images that broke away, each following its own line of possible development.

"Look. A vision of me in the future by only ten minutes will show me in a thousand life courses. Primarily, there are two; I may live, or die. But even those two instantly become a thousand, for I may die now, or at any later instant. I may die by the falling of the building or the stoppage of my heart, by an assassin's bullet, by the knife of a disgruntled inventor. They are improbable, and their future images would, on Bob Darnell's screen, have been dim, and ghostly. The world might end in that ten minutes, so destroying me. That must be there, for it is possible, a very faint image, so shadowy it is scarcely visible.

"If I live, a thousand courses are open: I may sit here, smoking peace-

fully; the telephone may ring; a fire may break out. Probably I shall continue to sit, and smoke—so strong and solid on the screen is an image of myself sitting, smoking. But shading from it in ever lighter black and gray to faintest haziness, is each of those other possibilities.

"THAT confused them, made exact work difficult. To get their reports of the markets, they had to determine with an absolute rigor that the next day's paper should be put on a certain stand, spread to the page they wanted, and, come hell or high water, they would yet put that paper there, and not move it so much as a hairbreadth. The image became probable, highly probable. Its ghost images faded. They read it.

"And there's one other fault. I know the reason I'd rather not give it. Just take this for one of the facts of that invention that by the very stuff of space, time shall never be overcome. The place they might determine, or the time, with absolute exactitude, but never would they ever know both for any given event.

"And the third day they cast for their future tracks. The near future was a confused haze, but I was with them when they sought in the future far enough for the haze to go. Laughing, elated, they cast a hundred years ahead, when, Bob Darnell said, 'I'll be a man with my long white beard looped through my trousers and over my shoulders for suspenders!'

"They started their machine, and set the control for probabilities in a very low range, for the chance of Bob Darnell living to one hundred and thirty-three years of age was remote. They had a device on their machine that would automatically sweep the future, till it found a lane that was occupied, a track that was not dead, in which Bob Darnell still lived. It was limited in speed—but not greatly, for each second

it looked down five hundred thousand tracks."

"Reaction speed of a photocell," said the young man slowly. "I know."

"Dwight, try not to know," pleaded Grantland. "I mean to give no such hints—but only what is needed to understand."

"If you say two times two—can you expect me to omit a mental four?" asked the young man. "Five hundred thousand a second is the reaction of a photocell. What is there in this invention that demands its suppression?"

"That is part of it. Five hundred thousand tracks a second it swept, and an hour passed, and another, and Darnell laughed at it.

"I guess I'm not due for a long, full life," he said.

"And just then the machine clicked his answer. When we saw the image on the screen, we thought the range was wrong, for the Bob Darnell on the screen was a healthier, stronger, sounder man than the Bob Darnell beside me.

"He was tanned and lean and muscular; his hair was black as night, and his hands were muscular and firm-fleshed. He looked thirty, not a hundred and thirty. But his eyes were old, they were old as the hills, and keen with a burning vigor as they seemed to concentrate on us. Slowly he smiled, and firm, even teeth appeared between his lips.

"Darnell whistled softly. 'They've licked old age,' he almost whispered.

"Evidently they had. Hugh spoke. 'They probably found it in some future age with this machine,' he whispered tensely. 'You're one keen old gentleman, Bob.'

"'But that's not a good chance for life apparently,' Darnell said. 'I wonder how I can choose the course that leads me there?'

"'Live a clean life, drink nothing

but water,' Kerry said. 'Turn on, O time, in your flight. Let's see what else we have.'

"DARNELL started the machine again—and it stopped almost instantly. One of Darnell's other tracks appeared. He'd gotten there that time with no outside aid, and he was horrible. 'Ah-h-h——' said Bob distastefully. 'I like the other way better. That face—turn it along, Hugh.'

"The mean, rheumy-eyed, incredibly seamed face disappeared; the screen went blank. And it stayed blank. Those were Bob's only tracks at that age. 'Not too bad,' he said, though. 'I didn't think I had a chance in the world.'

"'Let's see what we get at ten years,' Hugh suggested. 'That's more to the point.'

"'We'll wait all night getting through them,' objected Bob. 'But we'll take a few. Better start with about seventy probability. Ten years is long enough for me to die in, perhaps, so that ought to be fairly high.'

"They started again. And it ran for an hour—two hours. Bob Darnell had stopped laughing now, because he didn't like that blank and stubborn assurance that he had a mighty slim chance of living ten years more. Two hours and a half and it was beginning to tell on Darnell. 'Looks like I guessed too high,' was all he said.

"Then we got a track. It was Bob Darnell, all right, but his face was round and soft and flatulent, and he lay on a soft rubber floor on his back, with a little pair of trunks on, and he was grinning senselessly with a blank, stupid face at a male nurse who was feeding him some kind of gruel that he slobbered and spilled down his fat, soft cheeks. There wasn't any mind at all behind the dull, round eyes.

"It took us about ten seconds to take in that scene that was something like

ten years in the future. Then Bob spoke, and his voice was flat and strained. 'I'd say that was *dementia præcox*, and I'd say that damned machine was wrong, because I'm not going to be that way. I'm going to be dead first. It's the nastiest form of insanity I can think of offhand. Start that thing up, Hugh.'

"The trails got closer together there. We got another one in half an hour, and all that half hour we stood in absolute silence in the dim laboratory, while the machine clicked and hummed, and the screen writhed and flickered with blankness, because neither of us could think of anything to say to Bob, and Bob was too busy thinking to say anything.

"THEN the machine stopped again. It didn't take so long to understand that scene. Hugh started it on again. It found seven trails like that in the next hour. Then it found a sane trail, more or less, but it was a Bob Darnell who had gone through insanity. He wasn't actually insane, but his nervous system was broken.

"'Evidently you recover,' I said, trying to be hopeful.

"Bob grinned—unpleasantly. He shook his head. 'You don't recover. If you do—it wasn't *dementia præcox*. *Præcox* is an insanity that is simply a slow disintegration of the mind; it gets tired of worry and trouble, and decides the easiest way out is to go back to childhood, when there weren't any worries or troubles. But it goes back and discovers again the worries children have, and keeps going back and back, seeking the time when there were no troubles—and generally is stopped by pneumonia or tuberculosis or hemorrhage of the atrophied brain.

"'But it never recovers, and it's the most ghastly form of insanity there is because it is hopeless. It turns a strong,



sound man into a helpless, mindless infant. It's not like idiocy, because an idiot never grew up. This grows up, all right—and then grows down, lower than anything normal could be.

"That's just one path where I had a nervous breakdown and got over it. That one—why it might lead to the one-hundred-and-thirty-four-year-old track. But just—go on, Hugh."

"Hugh went on—on and on, and we found three sound, sane tracks.

"I don't have to go into more detail. I think you can understand Darnell's feelings. We tried at five years, and a few more tracks showed up. At two years, that first night, we found eighteen tracks, and eleven of them were insane, and seven sane. We named the two-year tracks on the Greek alphabet.

"The track Bob wanted, the long track that took him to a hundred and thirty-four, and beyond, clear out to a point where he merged in the march of the infinite future, was his tau track. The alpha, beta, gamma, delta—all those were quite insane, and quite horrible. That meant that, by far, the greater probability led to the unpleasant tracks.

"'Hugh, I guess it's your turn, if you want to try,' said Bob finally. 'We'll have to check these more carefully later.'

"'I think I do want to know,' Hugh said. 'But maybe Grantland would like to go now. He can't be here all the time.'

"'No, thank Heaven,' I said, 'I can't, and I don't want to know my tracks. Bob, I think one of the best ways to strike that tau track is to destroy this machine now.'

"Bob stared at me, then grinned lopsidedly. 'I can't now, John. For one thing, I have no right to; it means too much to the world. For another, I've got to find what decisions will put me on that long track. I made this thing

because I knew I couldn't live to see that long march we've already seen, leading on to the infinity even this can't reach. Now, by all that is to be, I've got to find how I can reach that time!'

"'By all that is to be, Bob, I know in my bones you won't, if this machine endures.'

"Bob grinned and shook his head at me.

"'I can't, John,' he said.

"And Hugh started the machine down his trails. He'd set it for a hundred years, like Darnell, at a slightly higher figure than had disclosed the far end of Bob's tau track. We picked up Hugh's pretty quickly, and he too looked sound and healthy. But he had no second trail—one chance to live to be a hundred and thirty-three.

"'I'm about as good on long life as you, Bob,' he said, 'if somebody helps me, but I guess I can't make it alone.'

"'Well, I'm not interested in going it alone myself,' Bob replied. 'It's not a heck of a lot better than some of those other things we've seen. Let's get closer home.'

"THEY tried the ten-year track. And on Hugh Kerry's trails, the machine clicked and hummed for a long, long time, and Kerry began to look paler and paler in the light from that wavering screen, because he didn't even have a chance of insane life.

"'Let's leave it for the night,' said Hugh finally. 'It's eight o'clock, and I'm hungry as a wolf. We can leave it running on the recorder, and come back after supper, maybe.'

"We came back after supper. It was ten, then. And the machine was still clicking and humming.

"We went home for the night. You see, reasonably enough, Hugh had assumed that he had a fair chance of living ten years, but he didn't, of course.

The machine was examining nearly two billion chances every hour it ran—and finding them blank.

"Hugh was down at seven the next morning. I got there at ten and found Bob and Hugh sitting very quiet, trying to smoke. The machine was still humming and clicking, and there wasn't a thing at all on the recorder.

"'Looks like I'm not slated for a long life,' Hugh greeted me unhappily, trying to grin. 'It hasn't found—thank Heaven!' The machine stopped suddenly.

"It was Hugh, quite hale and sound, his hair a bit gray, his eyes a bit sunken, his face a bit lined, but sane—and sound.

"'That's what we called your tau track,' said Bob after a minute of examination. 'You make the hundred-year mark on the first try.'

"'In other words,' said Kerry softly, 'I've got about as much chance of living ten years as I have of living a hundred. Yes. That's a good way to put it. A hell of a chance. What does it say at two years?'

"It took a long time, because we didn't want to start on the low probabilities, of course, and there just weren't any good ones. We didn't find anything very quickly. Eventually we knew he had three sane and one insane at ten years, and eleven all together at two years—three insane. And they were all of them so far down in probability, they started working right away.

"But the thing that brought home the need of haste was that when we looked, just for a moment, at Bob's two-year trails—two of the sane, and five insane trails had vanished! They had been eliminated by decisions made since the previous evening. I knew, Bob and Hugh knew, what the decision was, but we didn't say anything. He had decided to look at Hugh's trails in that time, and found those few trails. They cut off at one year, we found, so they had to

work on them. That, you see, reduced Bob Darnell's chances of finding the right trail—the tau trail that wasn't in tau position any more, but, thank Heaven, still existed.

"'It's not so hard, though,' said Kerry. 'We need only look to see what developments we make to-morrow, and to-morrow's to-morrow, to find how to perfect this machine, to eliminate the near-future images. We'll get it.'

"I had my business that I was trying to build up, so I had to leave them. I couldn't see them for five days, because I had to appear out in St. Louis, and stop over in Washington.

"WHEN I got back I went around to see them, thought it was nearly eleven o'clock. They were at it.

"'We've made some progress,' Hugh said. 'We've both mapped our trails carefully till they vanish in the near-future mists. We'll be able to hit that long trail for Bob fairly easily, but—I'm afraid I'll have to give mine up,' he said, his face twitching just a little. 'Still, that'll leave me some forty-five years of useful life, and a quick death way off in 1982. That's a long way to go.'

"'H-has your long trail been eliminated by a decision?' I asked.

"'Hm-m-m—in a sense. I located one of its decision points by luck. It's only about a month away, apparently. It is less, I believe, but we can't tell. I took a snap view of the trail, and hit what is evidently a decision point on it. What you didn't know is that twenty-seven years of that long trail is hopeless paralysis in pain. I apply for euthanasia four times unsuccessfully. Since I know where that trail leads, and still apply for that—why, I think I don't want it, anyway. But the trouble is, really, that the decision point I snapped, by sheer luck, is an automobile accident.

"'We've been trying to take instan-

taneous exposures of the trails, in the near future, to eliminate the blurring. We can do it by using a blurred image to get space coördinates and snapping the controls into lock position. The time register is automatically thrown out of gear, so we have only a vague idea of time. We know it's this year—but whether it's late this month, or early next, I don't know. We can't know.'

"But the accident—"

"I'd go through with it, perhaps—if I had some control. But Tom Phillips is driving. If I drive, of course, that's a different track altogether. He has my fate in his hands—and I can't bring myself to take it.'

"Have you told Tom?" I asked.

"Not yet, but I'm expecting him over. I sent a note around that he ought to get to-day or to-morrow, I—"

"The telephone rang. Hugh answered it. Tom Phillips was on the other end. He had the note, luckily, as he was packing then to drive up to Boston. He wanted Hugh to come over and tell him the story, or whatever it was Hugh wanted him for. Naturally, it would do no good if Tom couldn't see the machine, so, by dint of nearly fifteen minutes arguing, Hugh got him to come over.

"'Whew—if I hadn't been so afraid of riding with Tom, I would have gone over, at that,' said Hugh, mopping his head. 'He's a stubborn cuss when he gets an idea. I hope I can—eh? What, Bob?'

"Bob Darnell, in the laboratory, had called something.

"'What is it, Bob?' Hugh asked, going over.

"I went over, too. 'Oh, hello, John. I didn't know you were back. Patent go through all O. K.'"

"'Fine,' I answered. 'Everything's in order. What was it you wanted to tell Hugh?'

"'Yes—just told me. He had just finished calling Tom Phillips when you called him.'

"'What! My heaven! I called him—because his long track vanished while I was looking at it then! That was a decision point!'

"We looked eagerly. It was gone, all right. And suddenly Hugh stiffened. 'Bob,' he said, 'I'm afraid; I'm scared as hell—because maybe that was a decision point, because I didn't go over for Tom. I'm going to—'

"HE WENT, too—to call up Tom Phillips. But he was too late then, and he never got him. Tom hadn't seen a gravel truck smashing down a side street, hidden from him by a stopped trolley car.

"I was supposed to go over for him,' was all Hugh could say. 'But how was I to know? We didn't know the time accurately. We couldn't, could we, Bob? I didn't know—I didn't know—'

"But to the day of his death, he could not shake the feeling that he had brought Tom Phillips out to be killed, almost deliberately. It meant nothing that he had called him to warn him. He had called him out to death. He had been slow in his warning.

"A week later they had mapped their future trails; they had every decision point mapped, and noted; they knew every move that they must make to take them down those trails that led to that maximum of life each was granted. Every decision, every turn and branch of the road that led to happiness, success—except those they must make in the next ten months.

"From a high peak they could see the road that led off across the broad fields of the open country to the distant city of life they sought—but the tangled, snarled traffic of the near-by city where they were obscured the little alleys and

twisting, crooked streets of the near future in an inextricable maze.

"'We'll get it, though,' Hugh said confidently. 'We're getting it better and better now. We've found a system that will work, we think. You see, if to-day we can see what we will develop to-morrow, we will be a day ahead, and then if we see what comes the day after, we'll be two days. In a week we should have the thing solved. It is only that it becomes so annoying to remember—this may be the decision day, and I do not know it. And Bob is working hard to find my decisions, because I have so few lines beyond this December, apparently. He has plenty of sound lines leading on through next year.

"'That seems to make my case the more imperative, for I do not want to die when life is so near. Yet we cannot know even this, for the paths twine and twist, and it may be that my decision point to the long trail I seek is in December. And, similarly, it may be that the decision point Bob seeks—is to-morrow. We cannot guess, we cannot know, who is in the more desperate position, the more immediately threatened state.

"'But to-morrow we will advance faster, because we have determined as inflexibly as our determination to place that newspaper on the stand, that we shall hereafter, invariably, put on the blackboard there the discoveries of the day, and the progress made. That, we think, will clear up the images.'

"'Will clear up the images?' I asked in some surprise.

"'Because, you remember, Dwight, that it instantly cleared up the newspaper images.

"'Hugh looked a little worried.

"'Will,' he repeated. 'You see, it didn't so very much at first, for some reason. I can't quite— But at any rate, by watching our progress that we are to make, we will make swift advance

to the discovery of the secret, and long life.'

"'It seemed so clear,' so true, so logical. If they could steal the inventions of a million years in the future, could they not spy on their own progress of the next day and the next? So simple, so logical an advance.

"'But they missed one thing. There were many, many things they could try, and though they inflexibly determined that they would write on the blackboard the progress of the day, and did, the blackboard was blurred white and gray on the screen. For each of the thousand things they might try was there, you see, and from the first day two probabilities entered; that they deciphered, and tried one of those courses, and that they did not decipher the next day's work, and had to develop it directly.

"'THREE TIMES they read that blackboard. Each time the next day's blackboard read: 'Did work shown by future image yesterday.' So, when they did read it, remember, they saw only a day's work done, and the day's work was yet to be done, though they knew what it must be. If you are a repair man and know that to-morrow you must change the clutch plates and put in new transmission gears, that knowledge does not eliminate the operation.

"'They thought it might spare them the blind alleys. But one of those day's work was a blind alley that they were forced to rip out the next.

"'I was called over one day, the third time they read that blackboard, and they showed it to me. There were many, many images on it, and only one was legible, because it was very, very brief, and written very large.

"'Hugh smiled lopsidedly at me when I came in. 'Well, John, I think we've found one of my decision points,' he said.

"'What! got those near futures

cleared up?' I was immensely pleased. They'd advanced a lot, you know, since I first saw the instrument. Their near-future images were sometimes quite readable; their selectivity had been increased a thousandfold. But there was still a mistiness, a sort of basic mistiness.

"'No,' Darnell interrupted. 'We read the blackboard. Come—you can see it.'

"I did. It was quite easy to read, because Hugh had always been the one to write on the board, and his writing was cramped and neat. On many of those images the writing was cramped and neat. But on many others it was a broad, looping scrawl—Darnell's hand. It said simply: 'Hugh Kerry killed to-day. May God have mercy on me.'

"I swallowed hard before I spoke. 'There's a lot of images there, Hugh.'

"'Yes, but it's a decision point. Bob has sworn, and determined by all that's holy, he'll write the full facts on the case to-morrow, and not that message. The message still sticks, and none other has appeared. It's a decision point—and may God have mercy on me, too, for I don't know what that decision must be. It won't even tell me whether to stay indoors here or stay out of here.'

"Dwight, that is the thing that pressed and pressed on them. It was like the old Chinese water torture, and each day was a drop of water that fell, and they were bound to the wheel of time that cannot stop or be stopped. They had now the vision to see across that wheel to another day and another age—but they could not slow that progress through time, nor speed it by a whit.

"The days must come, and they must go, for all their knowledge of time. And the sun that day sank, as it had a thousand thousand thousand times before, and would a thousand thousand thousand times again, and it rose on a new

day. No force, nor will, nor wish could stay that progress; the day must come. And Hugh could not know, because the message was so stubborn, whether his decision lay in that laboratory or out in the open.

"I could not leave them. 'Yet I had to, because time still went on, and the courts went on. I left, on a case I know not the faintest detail of, save that I fought it with a bitter determination to win, and somehow won it.

"IT WAS four thirty when I got back to the laboratory. Bob Darnell met me, and his face was white and tense. 'Hugh?' I asked.

"'He's gone over to Teckno Products for some apparatus,' said Darnell quietly. 'He wouldn't let me go. He ought to be back. Come into the laboratory. I've been watching his trails.'

"I went with him into the laboratory where the rustle and hum of the machine, and the flickering, greenish light of the screen made it seem a sorcerer's lair of necromancy. Bob looked at the screen, then he turned to me with an unpleasant grin. 'It's blank, John. Those are Hugh Kerry's trails one year from to-day,' he said. He walked over to the blackboard very slowly, like an automaton, and picked up a piece of chalk. Slowly he erased the words on the slate, and in a round, broad scrawl he wrote: 'Hugh Kerry killed to-day. May God have mercy on me.'

"'Bob,' I said, 'Bob—that's the message you swore you wouldn't write. Erase it—wait till we know, till we know what happened to him so we can write the details. That may—'

"'Save him?' asked Bob bitterly. 'What matter now? He's dead now. But if you like, we can find the details. But nothing will do any good at all, because he's dead now, anyway. What good will it do to change that message? He's already taken the wrong trail, and

reached the end, John. But I'll find out—'

"He called up the police." He asked if they knew what had happened to Hugh Kerry, how he had been killed.

"The telephone was a noisy one, always had been, and I heard the answer where I stood. 'Hugh Kerry, eh? I have no report on any one by that name. What makes you think he's been killed, and how?'

"'He must be dead by this time,' said Bob. 'Ask your men, please. I—what?'

"'The other desk man,' said the man at the telephone, 'just got a call, and he says if you're looking for a guy named Hugh Kerry, he was just killed by a girl driver at Fourteenth and Seventh. He stepped out from behind a parked car right— Say, who's calling?'

"'Thanks, officer. Robert Darnell calling, from One Forty-three East Eighty-seventh. I'm going right over to the scene—'

"We went over in my car, got there pretty quickly, but the ambulance had already taken Hugh Kerry and the girl driver away. We heard from her later. Hugh had simply walked right into the side of her car, practically tripped over her running board. She was in the hospital with hysterics then. She kept saying he looked so surprised—as though somebody had suddenly explained something to him. Somebody had, you see—a surprisingly easy answer to a complex problem.

"Bob Darnell tried to get his car, that Hugh had driven over to Teckno Products in, but the police picked him up. I wasn't a criminal lawyer, and I had to go downtown and get Bill Poole, a classmate of mine, to come and help him out.

"It was a bad problem, too, we found out. Three weeks before Hugh Kerry had taken out a one-year-term-insurance policy for a hundred thousand dollars. And it had a double-indemnity

clause in case of accidental death. The insurance company was fighting for their two hundred thousand dollars, and the police were fighting for a murder charge. Because, you remember, Bob Darnell had said over the telephone: 'He must be dead by this time.'

"The time machine was too wild. We couldn't get any clear images to show them anything to speak of. But, finally, they had to let Bob go, because it's awfully difficult to prove murder when a man is killed in an automobile accident at one end of town, and a man you're accusing is calling the police station from the other. And they never tried to involve the poor girl who was the direct instrument of death.

"I went back with Bob Darnell, when they released him. I was with him when he started up the machine, and looked at his trails. There were only five left, because Hugh Kerry's trails were gone, now, and they had crossed and intertwined with Bob Darnell's, of course. The long trail was there, and one other sane trail—that ended in three years. The other three were all insane trails.

"BOB went to work harder than ever, and because I'd gotten behind in my work while Bob was tied up, I had to go to work harder than ever. It was three weeks before I could even get around to the laboratory.

"Bob Darnell greeted me at the door when I did. He had one of those slip chains on the door, and opened it only a crack when he let me in. 'Those insurance people kept bothering me,' he explained. 'They want to see what I'm doing all the time. They aren't going to, though.'

"I looked at him, and his eyes and forehead were screwed up in worry and concentration.

"'John,' he said finally, 'you know it's too bad Hugh went after that apparatus



Teckno was making. I got it and put it in, and they didn't make it right at all. I think maybe they're trying to make me order more so they can see how this works. I shouldn't have told the police about my chronoscope. But I put the apparatus in, and I think I got it in right, and John, it makes the near-future images better, but what do you think—it cuts out some of the long-range tracks. It won't show them all now.'

"His voice seemed quite annoyed, and rather petulant, I thought.

"'It won't?' I said, quite softly, I think. 'Let me see.'

"'No. It won't show them right. There are five. I saw 'em myself. But this thing won't work right. It cuts out four of them, and only shows one little short one. There's something wrong with it. I figured out what once, but I can't seem to remember any more. But I don't like Teckno any more, and I won't buy anything from 'em any more. I'm going to make 'em take this back.

"'Help me disconnect it, John? You remember how the chronoscope works; I can't seem to find the connections since I put in the wrong stuff Teckno made. I've been so worried, John, with the insurance company bothering me, and this not working right.'

"'It isn't working right, eh?' I asked.

'There's only one trail left? Well, you know, Bob, they change.'

"'No. There ought to be five trails. I know, cause I saw 'em,' he said decisively.

"So I went into the laboratory with him, and I looked at the screen, and there was only one trail, as he had said. It was as I had expected since I entered the house that day. I told Bob then that I couldn't help him any more, but that I had a friend who might be able to, though I wasn't sure. So I went away and brought your father, Dwight, who was, as I told you, the only other man who ever saw the chronoscope or the drawings of it.

"He helped me take it apart and break up the parts that might have been revealing."

John Grantland paused a long minute, his head sunk forward on his chest. He raised it slowly and added, as though an afterthought: "We were glad it was a very short track. It could have been so long——"

DWIGHT EDWARDS rose slowly, dropping his papers on Grantland's desk. He sighed as he turned away. "The world doesn't need all its Faradays, does it?" And as he walked through the door, "You'll take care of those papers for me——"



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High against the clouds  
burst a ghastly flare of  
flame—which ripped the  
night as it plunged—

# Doomed by

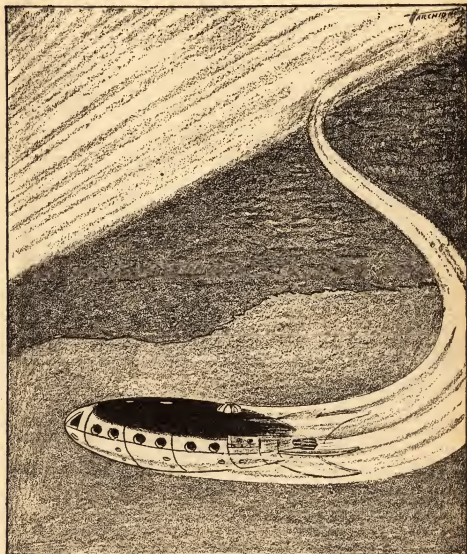


**G**ATTI FENTON scowled into the milk-blue eyes of the giant who had rolled across the pilot room to stand anxiously beside him. Those large, slightly protruding blue eyes seemed to be even more stricken by the unexpected state of affairs on Earth than was Gatti himself.

He rose from his chair, as the giant saluted, making a sweeping arc with the palm of his hand bent stiffly at the wrist in the way of those who rove in space. It was certain that Klein had something on his mind, and Gatti leaned slightly to listen as he rumbled hoarsely, "Ven I do say it myself, com-

# the Planetoid

*A Novelette by*  
**D. D. Sharp**



mander, the admiral to see you already!"

"Well?" Gatti said. "You're keeping him waiting!" He smiled a little to soften the sharpness of his tone as Klein's blue eyes blinked.

The giant backed away, clicked his heels and went out the door. Soon a rotund, bald man in the uniform of a

stratosphere rocket admiral strode stiffly into the room. Gatti recognized Admiral Ruoff, of course, though he was now hardly the beaming, enthusiastic chief who had fathered Gatti's last flight into the zone of the asteroids. He was a warrior still, a drawn-faced warrior, plainly badgered and puzzled. For a

moment he dropped all reserve, all formality. "Gatti! Lord, it's good to have you back." Hands clasped, they stood, and for a moment, an old, devilish dancing light broke into Gatti's brown eyes and found response in the softening corners of Ruoff's mouth. Then the admiral's lips drew straight and Gatti knew he was thinking of Cuba.

Beyond Havana harbor was a base which festered with active evils. From that base, mechanical monsters crawled into the sea to emerge upon American shores with automatic destruction. The whole Atlantic coast was already demolished, and no way had been discovered to halt the diabolical things at the shore, although scientists were working day and night to invent some barrier that would hold them.

The light died from Gatti's eyes as he waited for Ruoff to speak. Then it came, worse than he had dreamed. "Down—every one of them, Gatti. Your ship is the last of our proud armada. I gave you up months ago. Now there's a chance——" He cut his sentence and cast a suspicious stare at Klein.

Klein's big face grew violently flushed. Too evidently he was ill at ease. Gatti understood Klein's embarrassment as well as the admiral's suspicion. Klein was German, of course, but what difference? Germany was not the only European nation at war. Would to Heaven that were so, but they were all the enemy now; no man might claim his descent from any other source than some member of the damned entente! America was a composite of them all.

Yet Gatti knew that Klein's dialect was a sensitive point, doubly embarrassing since the outbreak of war.

Klein, conscious of his position, had taken to advertising his loyalty. In his coat he wore a small American flag, he rumbled anathema against all American enemies. He straffed the power in Ger-

many for falling in with the dictator handling the united charge of the Old World against the New.

KLEIN needed none of these defenses with Gatti. Klein had followed him up into the far spaces where countries shrink to vague molecules making up the faint ruddiness of a far-distant star. Klein had never failed him where death was czar and life crusaded far from its base through a despotic realm. Klein had done even more; he had offered his body as a shield for Gatti when it seemed that death was to be the cost of such a move. Klein had been tried in many fires, and his metal was good.

"Don't worry about Klein," Gatti assured. "I'd sooner mistrust myself. In fact, admiral"—Gatti's eyes lighted with that old dancing devilishness loved by every man of his crew—"he taught the Martians 'My Country, 'Tis of Thee.'"

Admiral Ruoff did not smile, but clicked back to serious business. "Commander Gatti," he said stiffly, "it is my duty to order you back into the void. It is also my duty to warn you of peril. Upon your mission depends whatever hope we have to-day, if the report I have received from you is all that you say."

"You mean?"

"I mean the report of Selenite you coded to me by light beam from Luna six days ago."

Gatti stood as frozen as though Ruoff had hypnotized him.

Selenite! How had it escaped him? It was a wild hope, but it was a hope.

"If this leaks out," Admiral Ruoff was saying with another glare at Klein, "you're finished. You can't get as far as Luna, much less to the planetoid."

Gatti hardly heard the mention of any peril to himself. He had named that metal. He had discovered it two years past at the cost of half his crew, who were unable to carry on because they were stricken totally blind. Blindness!

The very name burned him as the mention of water burns a famished man.

Selenite? A ton of it would mean everything to American defense. There were a thousand tons of it out there in space; in fact, a whole planetoid of it burning its blinding way through the darkness of the void, dazzling the vacuum by its intense penetrations. Selenite was one of the thousand asteroids sweeping around the Sun through the 280,000,000-mile band of vacancy between Mars and Jupiter, a bright diamond set in a necklace of dull stones.

"You've named it!" Gatti cried, losing his calm in the fever of enthusiasm. "We must have mechanical loaders and replace this quartz glass with that made for protection against the emanation. With a ton of that stuff over Cuba, good Lord, admiral, not a man on the island could see a wink. They'd not be able to even feed themselves!"

"How long will it take?" Ruoff demanded coldly.

"How soon can you change my glass and get me loading equipment?"

Ruoff pulled his mustache, squinted at the ceiling, "I'd say two weeks, with luck."

Gatti wheeled out a chart and made a few figures. "In that case we can probably be back in a couple of years."

Ruoff stared hard into Gatti's sober face. "In two years there will be no war."

"Taking long chances," Gatti ventured, "I'll get the stuff back within three months—provided you fit me out within a week. You see, Selenite will cross Earth's orbit Saturday next on its way toward its aphelion. Every second after that date handicaps us immensely."

Ruoff reached for a radiophone, spoke a few words in code which Gatti did not understand. When he spoke to Gatti again the strain seemed to ease from his bearing and his face. "Get loading," he said. "It's the biggest job you ever faced, my boy."

## II.

GATTI followed Admiral Ruoff to the door and then hurried to his desk. He had a few orders of his own to give, but on the way across the room he noticed Klein. His face was ashy, his eyes dazed, and they dumbly stared at him. Gatti slapped him upon the shoulder with the freedom among officers and men of the far spaces. "Buck up and make it snappy, old-timer. It's a tough timber, but we can break it. Leave stores on decks if you must, but ride 'em in."

Klein did not snap out of it. His eyes followed Gatti solemnly. "Buck up," Gatti demanded. "Admiral Ruoff doesn't know you, Klein. You can't blame him for being careful."

Suddenly the gloom vanished from the saucer-blue eyes. Klein thrust a sturdy thumb toward the flag in his buttonhole. "I be vit you, commander," he said. "Ven I do say it myself, he got a funny name himself, vot?"

Gatti wheeled to halt a passing officer, tall and towering, almost as tall as Klein. "Lieutenant Pike," he called.

Pike wheeled, clicked to attention. He faced Gatti, but his eyes focused a bit to the left of him.

"This way, lieutenant." Gatti touched him. "Follow to my desk, I want to talk with you. We're off to Selenite within a week. It'll be hell leaving you, but——"

Pike slowly turned his face toward Gatti's voice. He stood a moment staring, the unseeing stare of the blind, waiting for Gatti to finish a sentence he hardly knew how to complete. He smiled then, the sure, contagious smile of a man who knows how to win one over to his side. "Not this time, commander; my eyes are clearing. In a week I'll be able to read a chart."

Still Gatti had no more to say. There was a chance that Pike's eyes might clear. The ship's doctor had

hoped for them to do so before now. It would be hard going without Pike. He had never done it before. He didn't like to think of it.

"Klein," he said, "get Kansas City. Stock liquid oxygen from Kulon's plant only."

FEVERISHLY the week passed. Nightly came the warning that America was besieged. Distant detonations, thunderous rumblings, searchlights sweeping the clouds. Saturday came and Ruoff made good his implied promise. The *Skyhawk* was towed to the take-off rails. Long, slender, and shining, she angled with her nose at the distant sky.

The last man came aboard at sundown. The last visitor left at dark, leaving the rocket yard empty except for the monster soon to quit the Earth.

Gatti sat at the controls, waiting the signal which must soon be coming. His eyes searched the wounded blackness of a cloudy sky as a siren warned the darkened city of gas attack. Even within the ship he felt the shake of man-made thunder, and then high against the clouds burst a ghastly flare of flame which ripped the night as it plunged earthward.

"Cracked him up," Gatti growled to Klein. Klein leaned forward to search the heavens. A faint halo from the burning plane lighted his profile. Out in the field guide lights bloomed green and red—the signal from aerial observation that all was clear. With a scowl toward the enemy east, Gatti pressed signal for clearance. Waited, listening to the sirens beyond the yard warning away any chance wanderer from the backwash of air. Then an answering clear. He closed the switch.

Earth with its battlefields, its blood and destruction, dropped from under him as the explosion of oxygenized gasoline thundered like a tornado from the rotary exhausts. Across farmlands and

cities, hills and rivers, the *Skyhawk* rushed, leaving them to primal night or the stabbing flares of intense anxiety. She cast behind the hostile zone of scout planes, the higher lanes of sealed cruisers and stratosphere, and entered a dead, flat zone of silence which signaled escape from Earth's envelope of air.

One, two, four, five miles per second the velocity needle passed. Already she was breaking Earth's pull. The belt which snugged Gatti to the pilot's seat, strained at its buckles, straps and pads dragged at his abdomen and shoulders, and still he notched her up, faster, faster.

Pike, in the co-pilot seat, sat with a tight, complacent grin. He could not yet read chart, but his eyes were clearing, and the specialist at St. Louis had assured them he would be able to see much better very soon. Gatti was glad to have him there. Half blind, Pike was better than any mate he could find. His big strength, his cool courage, and his genius for charting made him most necessary on this decisive flight.

Gatti smiled at him cheerfully; there wasn't an enemy rocket around. From under the ship, the black Earth was falling into the gulf of emptiness which spread to the distant stars. Swiftly it shrank into itself until it seemed a monstrous umbrella of darkness against the sky, until it bore a flush along its eastern limb, a crescent of sunlight thin as a golden line, that widened steadily under the tangent of the *Skyhawk's* flight.

EARTH waxed full. She shrank away, until she was only a ruddy disk smaller than Luna had seemed from Earth, and Luna herself smaller than one of the golden spheres above a pawnbroker's museum.

Vacancy seized the *Skyhawk* and held her in suspension unmoved by the vibrating furor of redoubling velocities, as though constant acceleration exhausted itself upon an invisible treadmill. Over-



head and beneath blazed unmultiplied suns, startlingly magnificent.

Twenty hours those three sat ignoring the strain of safety belts, the aching tension of constant alertness. Once Klein attempted to break away from his seat, but Gatti commanded him back. Klein knew not the power of the force he would defy. Never had the *Skyhawk* bounded into space at the pace she now attempted.

There was a buzz of phones. Gatti answered, "Shut down the acceleration lever." The strain eased from the belts, and, as weight fell away, Gatti cut in the switch which revolved the ship to give artificial gravitation. The routine of ship life began. The *Skyhawk* was in her old element.

Gatti felt the familiar lure of bright ports all around him, worlds upon worlds, each with its own phenomena, its own seas, gases, continents and adventures. He was a space alien again, faring far from Earth, which slowly rotated its continents to the Sun with divine impartiality. Except for the bloodshed upon it, he could have dropped its hates and its anxieties into the gulf wherein it spun. As it was, he had a duty which magnified that planet beyond the vastness of all the worlds around him, which kept his heart tight, his head cool, and his hands firm upon the controls before him.

Hours passed into days, into weeks, with that changeless protraction known only to a ship hung in space. Time was dead, space and eternity endlessly becalmed. The white sun streaked around and around to the turn of the ship with spark ribbons of stars spreading from it. But, in the periscope which brought a view from the nose of the ship, the Sun stood still and no star moved, even to the hands of the chronometer.

Then came the exciting day when Gatti discovered a blinking point of light in the binocular telescopes. It was tiny as a speck of dust, but glittered like a

bit of the blinding Sun. He pushed back from the telescopes and signaled Pike. Pike nodded.

"I caught it while you were asleep. We'll contact it to the nth point of your calculations," Gatti said.

"Thank Heaven for that," Pike said fervently.

"Now you go back to sleep," Gatti ordered. "I'll carry on."

When Pike was gone Gatti watched the far-off speck of brilliance for a while, then he swung the lenses about to cover that sector of the heavens where Earth glowed red and far-away. It seemed tragically small and disrupted when he remembered the thunder of its quarrels and the hatreds of its peoples. Suddenly he felt a compassion for all flesh, for the suffering, dying races imprisoned to that star by the very breath of life. Why were they created so? Why had the hand which so prodigally broadcast worlds to infinite spaces, imprisoned intelligence to a tiny planet with an envelope of air?

That question was not even debated upon just then, for he became aware of an almost invisible thing plowing across the heavens. He pressed his eyes hard against the binoculars. That unseen thing was moving swiftly, eclipsing far-off constellations like a nebulous fish.

He pressed a button, broadcast an order into the hook-up. Instantly the whole ship came alive. There was a new pulse in the engine room, a quivering vibration to the metal walls. The hands of the accelerator dial crept forward again, notching up precarious velocities.

Pike strode in. "What's up, commander?"

"Pursued," Gatti said cryptically.

"Tipped off to us," Pike rumbled as he pressed his eyes to the telescopes. "Can't make it out." He frowned, blinking hard to clear the mist still left in his eyes.

Gatti took the binoculars. "Great

Lord!" he cried in amazement. "What speed's in that ship. We can't outrun them. We've got to stop and fight, even if Selenite gains a month. There's treason somewhere, Pike. That ship knows we're after the asteroid."

### III.

THE SHIP cleared rapidly into something to be seen rather than outlined. Gatti swung his binoculars again on Selenite, flying ahead like the tail light of a midnight plane. Carefully he measured the velocity of the pursuing ship and then the distance still remaining between the planetoid. He shook his head and gave up hope of reaching Selenite ahead of the pursuer. He had to stand by to fight, and a fight was the one thing he could not afford.

The *Skyhawk* carried no guns except small arms within the ship. The pursuer was undoubtedly armed for any kind of space attack. Gatti remembered that Admiral Ruoff had told him that such ships had left every American space warrior derelict in the void. The *Skyhawk* was not built for war. She was a sky cruiser only.

Every second now revealed that Gatti must not only defend himself against gunfire, but against supervelocity. The enemy fairly bounded with new power, like a great fish sighting a meal. By her moves, Gatti recognized her. She had a reputation, this *Shark*, the dread queen of the enemy fleet.

"Man space suits!" Gatti cried as she swelled from the dusky vacuum.

There was instant activity inside the *Skyhawk*. That order was only given in times of extreme peril to the ship.

The blue-gray monster swelled until she was but a few miles out. Her course was puzzling. She was at least twenty miles off its course, and angling toward Selenite as if ignoring Gatti after all. Was she trying to beat him at his own game? Had some one also

betrayed the secret of the blinding emanations?

He closed his eyes as though to sense the groping blindness such a cargo would scatter into American trenches. If the *Shark* passed he could never overtake her! He pushed aside the scatter of small figures he had made in his calculations. Whatever his chances in a fight, he couldn't risk that ship getting past.

"I believe they're after Selenite," he said, as calmly as though he did not know the feeling it must arouse aboard. "Double at controls, Pike," he ordered, and pressed a button which would broadcast his orders. "Crowd everything, boys. Gas up engines if you rip them open. All hands stand by with grenades for boarding her. We're wading in."

Pike snugged himself into the belts. Gatti swung the rudder until the tail fin leaned far into the discharging gases. Midspace the *Skyhawk* swept about, nosing over into the path of the oncoming *Shark*.

With that turn from pursuit of the planetoid, Selenite swept on beyond the power of the binoculars, melting into distance which the *Skyhawk* now could not hope to regain for many weeks. It was tough to watch her going, but the *Shark* was more important even than weeks of delay. Smoothly she glided across the emptiness around her, her portholes all alight like some brutish, luminous monster of the deep. She was not spinning, having evidently discovered some artificial gravity.

Gatti shot his ship across her bow like a cannon shell. He hoped his defiance would irritate her. If her commander could forgo a whack at his last hated rival in space, all was lost. For a few seconds it seemed the *Shark* would go past. Gatti was within ten miles of her nose when guns bristled from their nests in her sides, and an instant later a fleet of smoke puffs burst from their

muzzles. Silent, hurtling shells shot toward the *Skyhawk*, but Gatti was expecting them, and had pushed far down on his stick. Neatly, as a hawk dips before a stone, the *Skyhawk* dipped from the discharge, and straightened out again.

A GRIM SMILE worked into Gatti's face as he swung about with the *Shark* in pursuit. If he could outma-

neuver her he might some way put his crew aboard and rip her open to the suck of the void.

In his view plate he caught a glimpse of the square face of the enemy pilot, and the deep-set eyes fixed unrelentingly upon his ship. Domineering eyes, they were, certain there would be little work in crushing this eight-year-old space rover.

Gatti pushed ahead as the *Shark*



Then, before an order could be shouted, the ship was  
into them, tearing—drilling—

crowded in. Five miles, four, two, the electric eye recorded the distance between them. Then guns bristled again, this time for a close-up volley that would be impossible to avoid. But Gatti had another card up his sleeve. This time he rammed down the gravity lever until it hit the boards. Beyond the portholes the whirling stars began a mad stampede which sent a blur of fire flowing across the glass. Only in the periscope could anything be seen, and even there the *Shark* spun dizzily in a narrow orbit around his ship.

Centrifugal force, like an invisible hand, pushed Gatti's head hard down into his shoulders until it seemed his backbone would break. The instrument board melted away in a haze as the blood drained from his head, and the indicator swept into six, seven, eight, nine, ten gravity! Something screeched against the slick alloy of the outer hull, and shells burst, to send their splinters ricocheting far out into a million tiny asteroids, from the force of the spinning metal.

Cutting gravity, Gatti pressed his dizzy eyes to the periscope. He couldn't see a thing, but as he blinked determinedly at the haze, his head cleared and the *Shark* appeared again as something in a mist.

The red face at the controls was pressed hard against the observation glass, and the deep-set eyes were now burning like those of a famished wolf. The domineering snarl at the corners of the heavy mouth still sneered, but the cold assurance in the eyes had turned to an obstinate glare.

Gatti waited, hand on lever, ready to repeat the stunning gravity, but the *Shark* nested her guns. "What's up?" he frowned. Had the *Shark* decided that he wasn't worth the delay? Was she streaking off after Selenite, leaving him to tag helplessly on her tail?

But the *Shark* did not leave. Some miles out, she looped back. Slowly she

came, as though creeping in on him. From her nose projected an astonishingly long drill of metal, which revolved so fast its bit blurred in the sunlight. It was evident she could drain his air with one push of that drill into his hull. This time even multiplied gravity would give no protection. A loop might beat one of her deliberate charges, even two, but in the end the *Shark* would push her drill against his hull to drain his air.

All the crew were in air suits except Gatti, and he had no time to get one. His hands were busy with levers, his feet tensed at the double set of pedals. Already the *Shark* was on his tail, pushing up velocity as she caught his stride.

He let her crowd in until she almost touched him and then he arced over, so tightly that the beet-red face craned backward with wide-open mouth. He cut his arc close, pinching down until his landing gear scarce cleared the fin-like tail as he glided, back-volleying to snug upon the blue-gray metal of the enormous back. The *Shark* leaped and rolled like a terrified horse. The next few moments she went through all the gyrations of an outlaw bronc at its first feel of leather. Gatti cut in a vertical charge which clamped him fast, while the smaller ship rode high, wide and handsome.

He saved a lurch from her tail with a burst of power, countered a lurch down the side with a veer of his rudder, fought back a nose slide by another back volley, watching and countering as the *Shark* maneuvered to shake him, and his men gathered metal cutters and rushed for the locks. Every second was vital. With cutting jets, a dozen men could paralyze the *Shark* and leave her derelict.

Not a man reached an air lock. Gatti halted them with a broadcast which saved their lives. With a suddenness that had almost taken his breath, the *Shark* was gone, and only space and stars, light years away, were below him.

A marvelous ship, that *Shark*, she had dropped so quickly even the pressure of the *Skyhawk's* discharge could not hold against her. Then, before he could shout his order and locate her in the view plates, she was into him, tearing at his hull.

With air screaming from her hold, the *Skyhawk* tried a loop. The *Shark* turned its ugly head and drew in the drill. Without so much as a wait to take off the crew as prisoners, she streaked off toward Selenite, leaving them to the insensate mercies of the void.

#### IV.

GATTI watched her go, ignoring the gongs which broke into alarm, the bang of doors sucked shut in the draughts, the hurrying men brisk in their trained stride of military emergency. He felt the pulse of the engines die away, the sharp quickening of his breath, with only one thought. He had failed. The *Shark* was gone.

Feathery flakes of snow fell from the chilling vapors of his breath. He felt a hand upon his shoulder, then a helmet was pushed down over his head. He broke from his mood and pushed himself out of his chair to take the air suit Klein had brought him. Briskly he pulled into it and lugged down the helmet, then plugged in connections which put him in touch with his men.

Air pressure in the pilot room was already down to fourteen. The instrument board disclosed the wound to be in the engine room.

Smallwood was already at the phones, calling him. "Sealed, O. K.," he advised. That meant the compartment was isolated automatically from the rest of the ship. But it could not be abandoned. To get anywhere, engines must be started again.

"Can you get plates over the wound?" Gatti demanded. There was some delay.

Smallwood came back. "There are ten in this compartment. They are half-inch plates. Ought to hold, but we can't seal them down in here."

"Do the best you can," Gatti encouraged. "Ring for air when you're through. If you can't calk her tight, we'll get you out through the hull."

He swept the chart before him and scanned the empty blue—millions on millions of miles around the white line of his course. Frowning, he shook his head. Leakage through the metal sheets Smallwood was riveting over the wound would drain every cylinder of liquid oxygen long before he could hope to follow on to Selenite, even if he could get the engines going evenly.

He slipped off his helmet. Suddenly it seemed to weigh him down, and since the engine room was sealed off there was no need of it in the pilot room. He glared across at Pike, who had taken off his own helmet.

"Earth?" Pike ventured.

Gatti shook his head. "Could you, Pike, without Selenite, even if we make repairs?"

"Ahead, then?"

Gatti shrugged. "What use? We couldn't last three weeks leaking between plates, and we haven't a chance to seal them tight in mid-space. Flux won't flow without gravity, and men can't stick outside with the ship turning. The *Shark* knew that when she left us to our own."

He fixed his dividers upon the tiny dots which marked the orbit of Selenite, and then he stretched them to bridge a gap to a tiny triangular flag stuck with a pin into another series of dots which marked the orbit of the planetoid Reinmuth. With that distance as a radius, he laid it to his scale of miles.

For a while he calculated silently, laying the slower velocity of Reinmuth against that of Selenite as it followed on its heels in a slightly different plane.

Finally he reached for the phones and buzzed the engine room. "When those plates are placed, Smallwood, get your engines purring. We'll give you air if you'll get all you can out of them. Maybe it'll pep you up to know Reinmuth is swinging in on us only five hundred thousand miles out!"

Reinmuth would not make the landing Gatti could have wished. Not more than three miles in diameter, a man upon it would have so little weight he might push himself off its surface forever with a careless kick. But it would make a possible dry dock for putting outside plates over the hole. Any gravity was better than none. Of course, the flux would ooze rather than pour, and he did not know how the composition would act in vacuum when forced between the metal plates, but he hoped it would seal air tight.

For ten days Smallwood made good at the engines. And the *Skyhawk* cut across the orbit of Selenite to intercept its sister planetoid. At the end of those ten days she came in sight, tiny as a speck of floating dust. In another half hour he closed in swiftly and then slowed rotation for landing.

Reinmuth proved to be a big lump of metal, cracked and fissured as though it had been molded to the seams and chasms of a rocky cavern. Probably it had been blown out intact when the planet from which it had been born was torn apart. That it had neither atmosphere nor water was plainly revealed in the clarity of its horizons, and in the sharpness of sunlight and shadow.

All hands were immediately put to the tedious task of sealing the wound. Seven welders and helpers slid through the air locks, Gatti with them, taking startling strides, diving in and out of obliterating shadows. Klein trailed Gatti, his round blue eyes very sober under the helmet glass. Pike remained inside to direct the work in the engine room.

THE WOUND proved to be quite a problem. Flux froze over cavities and would not filter far between the metal plates. Air from the hose line pushed the flux through unevenly and left the compound full of tiny holes. The trouble was finally overcome by rolling the ship over to rest upon the riveted plates, while two men gently rocked the ship back and forth to spread the cement smoothly under its pressure.

Days slipped around the ship's chronometer before she was vacuum tight again, then air was valved into the engine room and Gatti had time to puzzle out some means of turning defeat to victory. Death reigned everywhere beyond the narrow diameter of metal and glass—death in unknown and dread forms. Was there no way to make it his ally? Over and over he turned that thought as he lay on a bench which flanked one side of the control room.

Klein came into the room, hung close around, pottering about with a broom, stopping now and then as though about to say something, then changing his mind. Evidently there was something troubling him.

"Tired, old space scout?" Gatti spoke soothingly.

Klein moved away. What he would have said he swallowed in a sullen growl. His ludicrous efforts at sweeping where gravitation was near a minimum brought a humorous twinkle into Gatti's eyes, but it was gone as quickly as it had risen. He left the bench and went back to his charts. The *Shark* must not pass. Somehow he had to wrest that cargo from her when she came streaking back toward Earth. Failing that, he must, at least, stop her for keeps.

Klein halted at his elbow, leaned hesitatingly, his face solemn.

"What's the trouble?" Gatti insisted.

"Might just as well," Klein rumbled, and stopped to clear his throat. "Ven you go back, commander? I'd say best

you not wait. Dot *Shark*, by damn, commander, ven she want she put a bomb in our belly."

"What are you trying to say?" Gatti scowled, astonished. Surely the void hadn't touched that calm, phlegmatic mind at last. Klein was trying some kind of queer kidding. He was one man Gatti believed would never crack to the mood of the void, and yet there was no humor in those eyes, not even a hint of it. And yet it was hard to believe that Klein was afraid. There was too much to the contrary.

"Not for myself, commander," Klein said. "Ven I do say it myself, it is the *Skyhawk* and you, yourself, vot?"

Gatti took up a pencil, rechecked the figure he had been making. There would be linear velocity of Reinmuth to aid him in the new plan he had in mind. There could be immediate get-away, for Reinmuth had little clutch on the ship.

He rang for Pike. Pike came, big, dauntless, assuring, his eyes already clear. The mental miasma sown by the close-pressing vacuum, the intense starlight, the eerie weightlessness, made no inroad into his morals. It was good to have him aboard.

"Ready for business?" Gatti demanded.

"All ready, sir."

"How are the men?"

"Ready, sir, but very tired."

"Let them get some sleep, lieutenant—ten hours of it."

Pike saluted soberly, as though he caught an omen of the dread thing that was in Gatti's mind.

A vacancy seemed to fill the pilot room as Pike withdrew. Gatti's impulse was to call him back. Pike had always shown unfailing courage, understanding comradeship, and for the moment Gatti felt himself walled in upon a lonely peak of military command. Every man's life aboard depended upon

his present decision. He could share it with Pike.

"Pike!" he called.

Pike wheeled at the door, but in that moment Gatti had conquered his own weakness. He had climbed his lonely peak again. "Get some sleep yourself, Pike." He smiled defiantly at the impulse that was within him. "Those are orders—understand?"

## V.

TEN HOURS LATER, when Pike came back into the pilot room he was grinning boyishly. "Ten hours!" he boomed. "Every man r'arin' to go."

"Assemble them on Number One—every man of them."

"That serious?"

"That serious, Pike."

Ten minutes later Gatti strode on deck Number One. The crew was already assembled, stern-faced, but eager. Gatti regarded them soberly. They were an exceptional lot for any man to command: Reinhardt, Smallwood, Saranoff, Andrews, O'Kane, Duboise, and so on down the ranks—the very cream skimmed from the daring of the world. He had roughed it with most of them on weird frontiers of far-off worlds, when there had been no military formality between them.

"Men," he began curtly, "our country has never been disappointed in us. We have always accomplished in every particular whatever task she has assigned. Until now our record has known no admission of failure. We cannot now break that record to return with excuses in our hands. However we have failed so far, however we fall short of the real purpose of this trip, there is one thing left for us to do to close out our careers in keeping with our code. The *Shark* must not pass. As your commanding officer, I give you death worthy



of space traditions. When the *Shark* appears we will crash her head-on!"

For a moment there was a dead hush upon the deck, but no eye fell. Each man met silently and courageously his own individual desire to live. Each faced with like fortitude their separate ideas of impending oblivion, or future existence. The stillness of the great void beyond the glass was tight within the ship, but Gatti knew his men. That was their first response in accepting his plan.

It was their mute rise to impending annihilation. But it was soon broken by some deep-voiced fellow in the second rank—a bellowing whoop which raised echoes down the walls. It was their old defiant yell of many an exciting charge. Another throat took it up and another, till the walls rang and the roar of it hurt the ears, though the glassed-off void beneath their feet refused it.

Not one of those men was acting normally, and they knew they were not. There were no savage ears to quake before its volume, only the patient void waiting beyond the glass from which every eye was averted. Patiently it waited, as they shouted it down, staring in with its million eyes and its wordless assurance, waiting to suck breath from those shouting throats, crystallize blood and flesh, held by only that thin wall of glass they themselves were ordered to break down.

And they were shouting down its grim silence, the endless bulk of it as it spread itself upon the ship, fanning the eager fires of enthusiastic life to defy the hollow thing around them.

Gatti left them as they shouted. He was shocked and a little thrilled by the outburst. Somehow it materialized the menace which stalked every ship in space, but it also aroused remembrance of glamorous days to be lived no more.

On his way to the pilot room he heard a whisper of steps behind him.

Klein, sober-eyed, grasped his hand. "Ven you come by the ship alive, commander, think of me, von't you please, in the far places—space comrades, vot?"

Gatti pressed the big hand. "Right, old space scout. That's the idea." He knew there wasn't a chance for any of them to survive the crashing velocity of those two space ships at head-on, but why destroy Klein's hope?

KLEIN followed him on into the pilot room. He seemed uneasy, as though there was something battling in his mind. Gatti wondered at that. It could not be fear—Klein had never shown that he knew what fear was. Still, all other perils Klein had charged into had been real, enemies he could fight. Was he teetering upon the edge of void madness? In any case, the best medicine for him was activity, any activity that would keep him occupied.

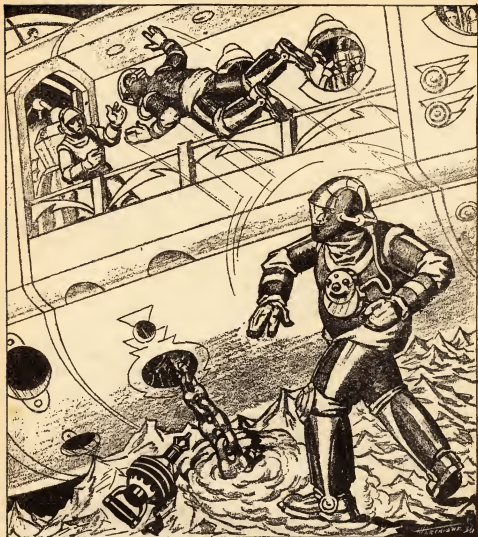
"Set flags in the salon," he ordered, "then go up and help pack explosives in the nose compartment."

Klein stood close beside him. For a moment he made no move, but stood blinking as though he was ready to break.

"Make it snappy." Gatti pulled open the flag cabinet and thrust a bundle of flags toward his hands. But Klein, veteran of space, who had stood up under every known test of space men and carried out the most trivial order with promptness and care, turned abruptly and ran down the corridor, leaving Gatti standing with the bundle of flags and a strained anxiety in his heart.

There was no time to chase a void-struck man, even when that man was dear old Klein. Any moment the *Shark* might break into view, and Gatti wanted to be at the controls when the crash came.

Half an hour later Pike came in. "Seen Klein?" he asked. "He can give us a hand if it's O. K. with you."



*"And luck to you, commander," he rumbled as he swung Gatti out—*

"Better call Andrews," Gatti said. "Klein's too busy." He thought it best not to let even Pike know Klein had gone under.

Three hours later the *Shark* had still not appeared. Klein had not come back into the pilot room, and casual inquiry brought no information as to his whereabouts. Void-struck men had been known to do queer and dangerous

things. Reluctantly, Gatti ordered a search.

Three men searched the vessel, upper deck to lower hold, but Klein was not to be found. That meant he had gone out upon the planetoid. Through the big view plates Gatti searched the sun-lighted crags of frozen metal. Shadow was blacker than night. Klein could hide before his very eyes. From every

promontory and in every crevice the pools and lakes of shadow erased every outline within them.

"Shall we search the planetoid?" Pike asked.

The zero hour was surely very close by then. Gatti shook his head. Klein's grave must be Reinmuth, though Gatti hated to leave him to its lonely route around the sun. What a grave Reinmuth was, like Mahomet's coffin, floating forever on nothing at all. How bleak and barren and lonely, suspended in emptiness where even the lowest form of life could never exist. It was harrowing to leave Klein there, and yet, after all, what difference?

The zero hour was indeed close. Far off a vague form moved to eclipse a handful of stars. Gatti's lips came tight. Despite his self-control, his pulse quickened and his breath came quick and short. There she came, swelling with amazing rapidity soon after she broke into view. He pressed a button and then another.

Alarms rang out above and below, on deck, through corridors, muffled far down in the bowels of the ship. Pike pushed into his seat and snugged down his belts, looking stiffly ahead.

The *Shark* swelled quickly to flood the lenses and crossed the deadline at which the electric eye was set to trip the discharge lever.

Those of the crew that were in sight stood grimly at their posts. There was now no time for dread, or defiance to flow from the frozen tension those clamorous bells had thrown upon every man aboard.

AS the lever dropped, a shudder shook the ship. It was startling, for the *Skyhawk* should have zoomed away as lightly as a bird from a twig.

The *Shark* filled the periscope and then the floor windows underfoot.

Automatically the controls raised the *Skyhawk's* discharge and the shudder

of her framework seemed strong enough to rip her apart.

The *Shark* filled to her monstrous size and then shrank as quickly as she had swelled, dwindling into a tiny miniature of her enormous bulk, which narrowed until it was lost in the dusky emptiness and only the fading and brightening of distant constellations revealed her presence in the hollow depths of space.

Gatti cut power down to save his ship. There had been no crash, and the *Shark* was gone. Something heart-breaking was wrong. The reaction was insufferable, a fizzling dénouement he knew not how to face. He could not go down to Earth with his failure in his hands.

Alarms were still ringing for the take-off, less than a minute old. Power was off again, the ship silent and defeated. What was wrong? It had seemed that an invisible hand from the sky had reached down to hold them back. That couldn't be. Something tangible had held his ship. What was it?

One glance through the floor windows confirmed his surmise that the ship was still aground, and yet, that in itself was more puzzling than had he found her limping along through space. Any man aboard could have lifted her from Reinmuth with an upthrust arm!

A phone rang. Pike slid from his seat and hurried away. Gatti cautiously gunned her up and cut the rudder around for a hard swing to work away from anything that could have fouled her. The ship shivered and shuddered, but he persistently gunned her up, watching the velocity dial. The needle was edging forward from the point it had hovered since landing.

His struggle was adding a tiny bit to the velocity of the planetoid, and yet she was still there under his keel, swinging this way and that, to be sure, but close under him, unshakeable. His eye covered the board, the indicator set

against the Sun was changing, very little to be sure, but enough to disclose a new direction of the planetoid's velocity.

Pike came soaring in, his eyes blazing.

"We're fouled on the planetoid," Gatti growled at him. "Get men outside and find what it is."

"Klein!" Pike bellowed. "The yellow, double-dealing—— Look at the anchor chain!"

Gatti swung the view plate to cover it. The slight change in the ship's direction put sunlight along the big chain which should have been snugged upon its reel. Now it was tightly stretched from anchor eye down to a pool of inky shadow under the ship. Certainly some one had fouled it into a crevice of the metal.

Had Klein? Gatti refused the idea. Klein wasn't yellow, and this wasn't the work of a void-struck man. Void-struck men broke things up, tore off their helmets to the suck of space, did many senseless, frenzied things, but this was a coward's trick, the act of a man who was afraid to die, and Klein had never been afraid to die. Later he was convinced of this conclusion when it was reported that the anchor was not only fouled in the crevice, but was fused in with flux from the ship.

TO Pike's repeated accusations, Gatti shook his head positively. "There's something to this we don't understand, Pike. Klein may be anything that takes bravery and nerve, but he isn't yellow."

"A spy, then," Pike insisted.

Again Gatti shook his head. "We've lived together more than eight years. We have been so long in the void that countries are inconsequential alongside the staggering boundaries of space. Klein would have died for either of us, and he had never shown the semblance of disloyalty. Why, Pike, are you suggesting Klein would throw down on you and me? Where's your loyalty, your-

self, to fall for circumstantial evidence of this sort?"

"Smallwood saw him with the flux barrel, commander," Pike said with much reserve. "I hate to believe it, Heaven knows, but what else can we believe? He's not only yellow, but he's smeared it over our ship!"

Gatti frowned and stared out into the dusky void. It was hard to believe, so far off Earth seemed, like an alien thing, like a tiny, unimportant, bloody star lost from them through seven million miles of emptiness. And yet wasn't he doing the very thing he had denied in Klein, counting those atomic boundaries which bred race prejudice and national jealousies, important enough to give his very life for them?

"But my case is different," he assured himself, and in a way he knew he was right. America did stand for more than race prejudice, but was race prejudice alone the factor which sent millions of peace-loving men out to destroy in the name of war? On either side could race prejudice or national jealousy long endure if it was not backed by some taste for blood within a man himself?

Since the *Shark* was hopelessly gone, Gatti ordered Klein brought in. Ten hours the whole crew hunted. Intense shadows and many fissures in the surface of the planetoid gave the hunted man every advantage. As long as he chose, he could probably elude them where flight was silent, invisible, and easily accomplished, and pursuers could be seen at a distance as they crossed the sunlit table lands.

The anchor chain was fused in solidly. Rather than release it from the ship and abandon it, Gatti tried again to drag it free. As he pulled he noticed the Sun needle moving again. It gained a degree, and then another as he drove at an arc from the linear velocity. Reinmuth was obeying a power higher than natural law! To the tug of the *Skyhawk* it plowed about into a loop which

set it back toward the Sun and the ruddy Earth star which swung between.

With the Sun on the *Skyhawk's* nose, Gatti turned the control over to Pike. Strain was easing away and the shudder in the hull dying even as power was stepped up and up. Now he could control the planetoid, but nearer the Earth that would be out of the question.

Before him was an intricate calculation in which must be no error in all its ramifications which concerned velocity, gravity and mass. Earth, too, was out of Reinmuth's plane, and Earth rotated on its axis, swung around the Moon, rushed along its orbit at eighteen and six tenth miles per second! An astounding maze of factors which even Gatti might check and recheck with care.

## VI.

SIX DAYS PASSED, space-frozen and unending to every one aboard the *Skyhawk*. Gatti ate and slept at the controls. Pike sat beside him constantly, taking his turn with new optimism now that there was hope ahead.

Duboise and Saranoff discovered Klein entrenched in a cavern of metal from which only a bomb could dislodge him. Gatti ordered him left alone, but cautioned the crew to watch for an opportunity to get him back within the ship. Stubbornly, he held to the idea that if he could talk with Klein there would be some explanation that would clear the accusation against him, though not even Pike supported him in this hope.

Soon Earth swelled perceptibly, growing swiftly into a bright moon with dark continents and shining oceans rotating across its fleeced face. As gravity doubled and redoubled, Reinmuth snarled and snapped at the anchor chain as though rebellious of any restraint. Soon she weighed a million tons, and the *Skyhawk* lost any possible control of her.

From out of cloud fleece moved the Western Hemisphere, with the familiar map of North America spread between oceans like the page of a geography. It raised a throb in Gatti's heart. What was the story of the battle going on upon that tranquil darkness? Was that tiny smear of land beyond the heel of Florida still vomiting its mechanical destroyers?

It seemed too small to be the deadly menace it was to the great continent spread beyond it. It seemed almost small enough to be crunched out with the end of a thumb. And yet every resource of the advanced civilization upon the continent had failed to halt the ravages from that tiny base. Could Gatti, with this rock in his sling, like David faring against the Philistines, sink his pebble into the armored head?

He remembered a big hole in the western part of the United States, near Winslow, Arizona. Once he had climbed to the lip of it, crunching the finely powdered rock that had been blasted up from the bowels of the Earth, then he had talked to engineers who had tried to locate the meteor that had caused the wound. That meteor was small compared with the one he had slung toward the enemy base.

He smiled grimly, remembering the stories he had heard of the meteor of the Siberian wastes. It had wrecked a forest and uprooted trees for fifty miles around. Reinmuth was a bombshell indeed, heaving down to shake the very foundations of the whole island.

She seemed eager for her feast of chaos, pulling the velocity needle up and up as the Earth swelled. Gatti knew it was time to cut loose if he wished to save his ship from the burning fingers of the atmosphere, and yet he was loath to leave Klein without a word, without some sign that friendship, after all, was the strongest thing in a loyal man.

"I'll go after him," he decided aloud. "He'll come when I talk with him."

"Right, sir," Pike barked, then in a

softer tone. "Why not forget him, Gatti? Good Lord, it's the best way out for him."

Gatti shook his head stubbornly. "Treachery isn't in Klein's make-up, Pike."

"Make any one down there believe that." Pike indicated the great Earth. "They'll tear him apart."

"No one there must ever know. Klein's a hero to every boy in America. And even this—this mistake has given them victory!"

He switched on the visoscope, hoping they were back in its radius of reception. He got Havana as in a mist, and then the rocket yard, hemmed in by the glistening metal roofs of munition works. "Look!" He indicated the screen. "We'll not only crush out the base, but bury the Selenite, too!"

THE HAZE from the screen cleared and the *Shark* developed as a picture develops in the dark room. Down the gangway filed a line of gray-clad men, to march through a narrow lane between overflowing thousands. A girl in white was on the shoulders of the mob. She must have been aboard. Gatti dialed her into close-up. Her face was flushed prettily. Her eyes were big and haunting. In them was the crazed glitter of hysteria.

Hysteria! The whole Earth seethed with it. "Win the war" outsloganed every grain of common sense. Forgotten by that mob was every sober instinct, and soon a new frenzy would seize them as they scattered for self-preservation before the blazing meteor from the void.

He snapped off the visoscope. He must not think of them as men and women, fellow beings chilled before the fear of death. They were the enemy—Heaven pity them.

He scanned Reinmuth again. Her metal peaks still cast long shadows, but now Earthshine brightened them. Form and outline were visible now on almost

the whole surface, despite white sunshine on metal pinnacles and hills. In the Earthshine something moved far down in a canyon of the metal. It mounted swiftly as though in flight and alarm—half crouching like a great ape rather than a man. Only his knowledge that Klein was on the planetoid made him certain that it was he. In that crouch lurked a furtive, uncertain fellow. Almost Gatti believed for the time that devils could slip in and take possession of a man.

That was neither here nor there. Klein was coming in. Gatti ordered the guards at the air lock to be ready to overpower him. Doubtless he would be a bit crazed. But Klein was not making toward the locks at all. In his hand was a torch. Instead of trying to save himself at the last moment, it seemed he was intent on cutting loose the ship.

Gatti pushed himself from the pilot seat and swung to the air-suit locker. It was plain to him by then what Klein thought to do. Under them was the United States. Across it Reinmuth rushed on her calculated path to Cuba. Klein, despite his long years in space, knew little of the laws of motion. Evidently he believed the *Skyhawk* was still guiding the planetoid, and that he could drop her short of her goal by cutting the chain. He did not understand that no longer did the tail wag the dog, but the dog was very determinedly running off with the tail.

Still determined to save him from a fiery death, Gatti pulled on his air suit and quickly lugged down the helmet. He knew he was taking his own life into Klein's peril. "Cut loose in three minutes, whether I'm back or not," he ordered Pike, and rushed down the corridor to the air lock.

He found Klein playing the fire jet upon the big chain. He caught up his phone line and plugged in to Klein's air suit.

"Stop that, Klein. Throw down that torch and come inside. We can still fix this thing up, old space scout."

"I von't," Klein shouted, averting his eyes from the level gaze Gatti fixed upon him. "Lay off me, commander. I kill you, I vill!"

Through the glazed helmet Gatti could see the blue fanatical eyes which no longer seemed Klein's. What eyes they were, blazing with martyrdom. They raised to meet Gatti's as he waited without a word, crumbling under Gatti's, softening as they squinted shut. The heavy jaws compressed. The lips quivered. "Commander, I kill you just as vell. Keep hands off vit you!"

"Snap out of it," Gatti said. "You can't stop Reinmuth now. Its velocity is too great. Better come inside, Klein. We'll forget all this. After all, you saved the day for us. I know the instinct in you, the urge of a thousand ancestors. Got plenty of it myself. It's one of those primitive things that slip up on us. Come on, we'll make the crew believe it's void madness."

**GATTI'S VOICE** was persuasive, but Klein was obdurate, and there was no time for many words. Hooking his toes behind a shard of metal, Gatti clutched him quickly around the neck. If he could get him inside, there would be time to iron the thing out some way. Klein swayed backward to his clutch, but did not trail along lightly, as Gatti expected. Klein, too, had learned that trick of leverage. His big hands gripped Gatti's air suit about the middle, and the movement was so swift and unexpected Gatti found himself swung swiftly up and held high above the giant's head. His toe hold had slipped, and he had no power to resist.

For a moment he struggled above a gulf of emptiness held in an unyielding grip. Then a trembling came into the clutching hands.

Gatti knew the desire which battled

between two loyalties, and felt sorry for the man, even as space hung waiting for the release of those fingers, even as the arms bowed for the fling. As the heaven came, Gatti clutched at the helmet straps of the man below him. The drop beyond was dizzy and repellent, and his body writhed back from that swing as his hands slipped down the straps.

Klein drew back for another try. There was no time to fight, even if Gatti had a chance. The ship must soon be casting off. Gatti let go the straps. Pike would wait for him if he fought too long. The *Skyhawk* must save itself. He prepared to hold himself from resistance when Klein swung out again.

But Klein did not swing. He goggled up at him. There was a gap between chain and ship, and Klein had seen that gap.

"Ve go down together, commander," he said. "How you should hate thot!"

His begging eyes searched Gatti's face, blinking hard. His voice softened, almost the old familiar rumble Gatti loved, "If I vass a man, maybe I would lissen to that old somethings in my heart."

Gatti had no reply. He was watching the *Skyhawk* where she rode free, ready for her loop back away from the approaching atmosphere. Those had been his instructions.

"Good old ship," he whispered softly. "Be good to her, Pike."

Then he saw Pike out on the catwalk, outside the vessel, with a leg hooked over the catwalk rail. Heaven knew what Pike thought he could do.

Gatti twisted to free himself from Klein. He wanted to part with his ship standing like a man on his own two feet. But Klein held on, gaping up at Pike as he leaned far out over the rail.

Gatti scowled resentfully. The ship mustn't come down any further. Air was already dense enough to whine across the planetoid. It would soon be a burning blast. The paw of it strength-



ened even as Pike leaned down, wiggling frantically for him to leap.

"Go back," Gatti signaled.

It was all right for a commander to go down with his ship, but not for a ship to go down with her commander. Pike ought to know that.

"Excuse me, commander, fighting you," Klein rumbled softly. "Will you think, maybe sometimes, up there, Venus, Mars, Luna maybe, fighting vit you, vot? The old space scout and the far places, vot?"

His slow mind seemed grappling with two ideas, as he watched Pike's frantic signals. "And luck to you, commander," he rumbled as he crouched and swung, heaving Gatti out across the widening chasm between the meteor and the ship.

IT WAS good to feel the *Skyhawk* under his feet again, to feel the sweeping soar of her as she followed the planetoid the few moments it took Gatti to get up to the controls.

At his post again, he looked down at Klein. He was standing now at stiff military attention, as though he had at last cleared his honor with both ideals. Ship and planetoid broke from each other as Gatti swept into a loop.

Klein was facing him, and he could either see, or imagine, the old dauntless grin under the helmet glass. Suddenly, as the ship arced, Klein's hand left his side and swept up to his face in the old colorful salute of those who dare the far spaces, and he seemed to grow taller and a bit sublime as Gatti answered it.

Earth rushed back from the ship as it had rushed in before. Reinmuth hurtled on, bearing its one stiffly erect inhabitant. Klein dwarfed, disappeared. A ruddy glow circled the dark edges of the planetoid and quickly caught the whole mass. A blinding burst of fire—the whole horizon of Earth luminous with incandescent vapors, and the great Earth itself spreading under the white-

ness like a dark canopy.

Seconds of that blinding splendor—then the crash! No eye could measure it, no imagination picture it. Far away, where the *Skyhawk* rode, it was hard to believe anything staggering had taken place.

Only after many years, when Gatti made a trip to the crater in memory of the victory Klein had ignorantly given him, did he begin to gather a real idea of the destruction he had flung from the sling of his space ship.

In the new peace of a new world, in the mature altruism of science-minded men and women, in an era which had conquered the power-organized war and the fear war, it was but natural that Gatti should forget all but the best in the man.

So, remembering, he surveyed the great hole in which grew no tree, no living thing, in which survived no scrap of metal from the planetoid nor the munitions of old enemies. He ventured far down into the crater which flung its farthest rim to the haze of distance a hundred miles away, and he wondered at the world's advance, wondered more at its old stupidity, at the laboring ages of dark fear which held back, so long, the rightful dominion of intelligent man.

And yet, in that chaotic tomb of old enemies, and of his friend, something that was apart from the brutish blood lust of war, drew him at stiff attention, and he included in his salute to Klein, the nobility of misdirected heroism. Courage and nobility have always inspired every sacrifice, whether the god to whom it is offered be Moloch or Jehovah, whether reason or unreason demand the martyrdom.

What rites to Moloch there had been in those antiquated, war-torn nations! What rule of unreason, when a patriot believed more in the sanctity of national whims than in the rights of men, the triumph of truth, or protection and fidelity, first, to those he loved.

# Checking Up

*There are times when I wonder whether we appreciate what Astounding has accomplished for science-fiction in the last two years. We still receive a smattering of letters which show that their writers do not even recognize the change in quality. Of course, the overwhelming majority shows appreciation of our progress.*

*Do you recall that three years ago, if a science-fiction magazine contained a good story it was something to talk about? And that when Astounding came to Street & Smith we began to seek out the BEST writers in the field and buy only their BEST stories?*

*It was natural that some men whose names we remembered failed to give us first-class stories. These we reluctantly discarded. We did not buy names—we bought STORIES. Many of our old favorites made the grade. And in a sparkling parade we offered them to you, expecting your loyal support in a field of literature which has a distinct class appeal.*

*We have built value steadily—and you who have followed the magazine realize it. It has not been a flash in the pan—a sudden, dazzling array of names to be followed by the anticlimax of mediocrity. It has been sustained effort on my part to give you the best in science-fiction.*

*This month, for instance, we give you Jack Williamson, John Russell Fearn, Don A. Stuart, Raymond Z. Gallun, Frank B. Long and Eando Binder. It seems like a galaxy of stars.*

*But next month we bring to you H. P. Lovecraft in a complete novel of unusual power, Nat Schachner with a thought-variant, Stanton A. Coblenz, Warner Van Lorne and Jack Williamson. There is no letting down on our part.*

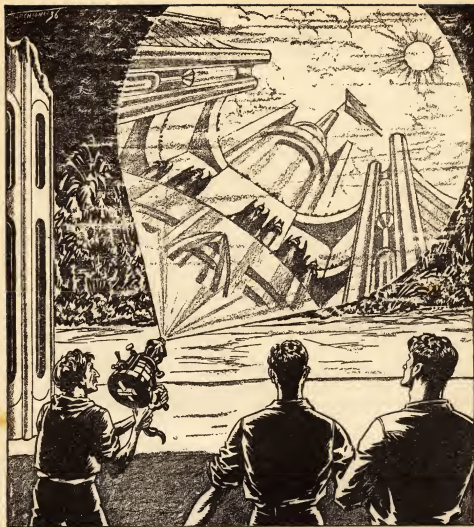
*Forthcoming issues have already scheduled Murray Leinster, John W. Campbell, Jr. and Donald Wandrei. And we are in constant touch with Dr. E. E. Smith and others you ask about.*

*I am getting many letters from new readers who have recently been introduced to our circle. I wish it were possible to greet each one individually. But you know I'd like to, and that is the next best thing—isn't it?*

*Working together, with you introducing new readers, and me giving you a magazine of which we can all be proud, there is nothing to stop our progress.*

*But don't forget that this calls for sustained effort on your part as well as mine!*

*The Editor.*



*And on this screen phantasmal shapes took form—*

# The Weapon

by Raymond  
Z. Gallun

**I**T WOULD take a vivid imagination to construct a mental picture of what the place had once been like. The low, circular wall of stone, glassy, as if fused by terrific heat, gave only the faintest hint of a departed enigma. The rusted remnants of girders, projecting upward from it, meant nothing in

particular. The sterile area the barrier inclosed, featureless except for the crude grass hut of fairly recent construction at its center, suggested to tired minds and frazzled nerves, little more than an overpowering depression.

Beyond the walls, which must have been several hundred yards in circum-

ference, was the jungle, dense and shadowy, and horrible as some disease. It was blotched with vivid, trailing blooms.

The sun was hot, and the air was motionless. The two white men who had climbed the wall and had dropped their packs on its broad crest showed no enthusiasm as they surveyed what lay within. Both were youths on their first real adventure after leaving college. They had come a long way, on foot, through thick wilderness. And their march from Fargo's little trading station had not been without unexpected trouble.

Their guide, who had followed them to the top of the barrier, was worthy of note, so hideously scarred was he. One cheek had been cut away, exposing toothless gums. Scraggy white locks grew on only half of his pate, for the other half seemed to have been scalped at some time. Now he looked out over the expanse within the walls, with a gleam of cryptic malevolence smoldering in his small, squinted eyes. He gave a little, inarticulate grunt; but otherwise he remained as silent as a battered Inca idol.

Finally one of the whites spoke:

"The Forgotten City, Corliss. Are you satisfied that it is worth coming here to see?"

Kent Marwell was a slight, studious-appearing fellow. His words were soft and yet biting, controlled, and yet wild with an inner tension that was but sketchily concealed. In his bloodshot eyes, and about the bitter curve of his lips, there was evidence of hardships to which the overcivilized are unsuited.

"This place is clearly not an outpost of Inca culture," he added contemptuously. "It looks like what's left of some engineer's abortive brainstorm!"

And John Corliss, his companion, was in no better mood. His massive shoulders hunched aggressively, as if he were preparing to plow through a line of opposing gridders.

"Shut up, Peewee!" he grated harshly. "Coming here was as much your idea as mine! Didn't you pay that crook, Fargo, two hundred good American dollars of my money just so he'd lend us this native halfwit, that he happened to find loose in the woods a couple of months ago, to show us these remarkable ruins? Do you think I'm all hot and bothered with joy about being here? Anyway, if you hadn't accidentally shot at that Pygmy, those six greasers wouldn't have got scared that the little devils were going to murder them, and they wouldn't have pinched our guns and deserted! You're a——"

*Hs-s-s-s!*

THE TWO YOUTHS turned abruptly. Both knew that the signal was only the guide, Pedro, the speechless, blowing air sibilantly between his withered gums. But Pedro had remained faithful to them. Besides, he had an Indian's keen vision and woodcraft that detected dangers while there was still time to be careful.

What was it now? They looked at the little, wizened old man, crouching like a brown toad on the wall. He could not speak, for the ability to do so had been taken from him by some ghastly adventure of long ago. Besides, he had not been in contact with civilization long enough to have learned any language with which Corliss and Marwell were acquainted, even granting that he possessed sufficient intelligence to gain a rudimentary mastery of such a language. But their eyes could follow the line of his pointing arm.

Out there where the forest began, a patch of leaves stirred ever so slightly. Something whispered through the air. Instinctively the white men aped Pedro's swift, sideward bound. A small floss-fluffed dart pricked the earth in the walled inclosure. Curare! A scratch from a barb doped with the deadly stuff was plenty to kill.

Pedro motioned his two charges to drop inside the barrier. They did so, hauling their packs after them. At least they were fairly safe from the darts of the Pygmies, here.

Marwell's thin face had whitened a trifle. But the touch of fear strengthened his courage and dampened his caustic mood. "The imps have soured on us all right," he remarked with a rueful grimace. "We're in for it, Mugs. They want us, and we haven't even a revolver to hold them off. I guess the only thing we can do is wait, and pray for a break. They are probably a little scared to attack us *en masse* during daylight. Meanwhile we might go through with our snoop tour, even if Fargo did play us for a couple of suckers."

Corliss nodded, still with a trace of surliness. "Right, Peewee," he said.

The two indicated as best they could by signs that Pedro was to keep watch. Then they descended within the walls. From around them, deep in the forest beyond the barrier, came the penetrating whisper of signal drums, muttering what seemed to them a promise of death.

The reddish ground beneath them was marked with many small human footprints. They followed these tracks to the grass hut at the center of the circular area. There was nothing remarkable about the crude structure. It was clearly a product of the Pygmies. But as they paused before its low, darkened entrance, they knew that a sense of eeriness had been growing upon them, in spite of their very recent attitude of brain—and nerve-weary disappointment.

WHAT mysteries might lie beyond the low doorway was not the sole cause of the feeling. There was something about this whole place, about the glassy walls that surrounded it, and about its sad, vegetationless interior, that was—inexplicable. The Incas, whose homeland lay far to the west, beyond the

mighty Andes, could never have fabricated things such as these ruins represented.

Nor did Marwell's guess that here was the partial crystallization of some white man's magnificent, though crazy, idea, seem logical now. It would have been almost impossible to bring all the necessary materials through the trackless Amazonian jungle. And, in addition, though weathering in this climate was naturally very swift, the signs were that the relics here were twenty years old at least. This region had been even more difficult to reach then than now.

Kent Marwell was ready to admit that he was stumped. He pointed back to where a rusty girder projected upward at an in-turned angle, at the summit of the wall. At regular intervals around the barrier, were other, similarly positioned girders, the upper ends of which seemed to have been fused off by some terrifically heated blast. Perhaps once they had formed a huge, conical framework, or support.

"Those things were never made by any people that we ever heard about, Mugs," he said. "For one thing, big as they are, they were cast in one piece—no bolts. Besides, the internal bracing is different from anything I've ever seen up to now. I didn't notice before, but—but—"

"I know," Corliss commented. "Maybe we owed old Fargo those two hundred bucks at that."

He hunched his broad shoulders down so that he could enter the low doorway of the hut, brushing aside the smelly jaguar pelt that hung in his way. Marwell followed him.

"Pygmy fetish house," the latter said.

Dim light found its way through imperfections in the walls, illumining curious little wooden gods with vacuous faces. Suspended snake skins, perhaps containing the medicines of witchcraft, rustled in the wind made by the intruders' entrance.

They wasted no time examining this curious paraphernalia, however. Their attention was drawn irresistibly to a set of objects that seemed out of place in this primitive array. A large, black cube, perfectly formed, stood at the center of the floor, and seemed attached to some firmly fixed foundation beneath. They touched it briefly. Its surfaces were smooth and hard, like stone. There was no visible means of discovering what it contained, if it were other than solid, which it might have been in so far as they were able to tell.

BUT again their attention wandered. Lying atop the cube were several splinters of metal, bright and uncorroded. Beside them rested a curious, unnameable apparatus, made of the same rustless material.

Without comment or exclamation, Marwell picked it up, and turned it over wonderingly in his hands. It was well-shaped, perhaps eighteen inches in length, and was as bright and new in appearance as if it had just been delivered by the unknown craftsmen who had made it. Its weight was small in comparison to its bulk. The device was provided with a handle at one edge of its larger end, as a pistol would be. But the grip was curved and fluted in such a way as to be uncomfortable and clumsy for a human hand to grasp. At the narrow end was a set of lenses, and the larger end was supplied with a detachable cover. Behind the grip was a small lever, and along the opposite side of the device, paralleling its central axis, was a hollow tube, fitted with lenses like a small telescope.

"It's a camera of some kind, Pee-wee!" Corliss burst out.

"Maybe," Kent Marwell commented.

He fussed with the lever, pressing it slightly. From the lensed eye at the front of the apparatus came a momentary flicker of light. Warned, Marwell took his fingers away from the lever.

Then, fully conscious of the possible danger of his act, but impelled to it by eagerness to probe a mystery, he held the apparatus up, and attempted to peer inside it through the system of lenses.

He saw a dim glow; but there was something infinitely more surprising about it than its mere presence. It was uneven. In it, light and shadow and color were articulated to form a picture. It was as real as any photograph could be. At its center the sun was shining, for the view seemed to angle up toward the sky. But the jungle could be seen, too, and a narrow stretch of ground. A low wall was visible—the same wall which Marwell and his companions had scaled a short while before; but this was a scene of another, earlier time, perhaps twenty or fifty years in the past.

The girders gleamed with the sheen of new-cast metal. And instead of being fused off short, they were complete, forming the props of a slender, wolfish fabrication, whose black, torpedolike snout was supported significantly toward zenith. It could be seen that the finned base of the thing rested at the center of the walled inclosure.

Nor was the view motionless, like a photograph. It had the movement of an actual sequence of events. Shadows shifted, foliage trembled as if blown by wind; naked Indians toiled slavishly, moving loaded cages. Somehow those Indians walked backward. This was the only easily noticed evidence that the sequence of things that happened was oddly in reverse.

THE CAGES contained specimens of the various creatures that inhabited the jungle: monkeys, lizards, a jaguar, a great, listless boa, parrots, even a tapir.

Crouching before a slab of stone in front of the cages was the master, or one of the masters. In spite of his grotesque form, no observer could have doubted that in him, or in his kind, re-

sided the purpose and the initiative that had erected this strange camp.

Folded, bluish wings, like those of a pterodactyl, caped his narrow shoulders. His head, supported on a slender neck, was broad and rounded, and was equipped with a slender beak. From beneath his wings, clawed members projected. They moved with swift, darting gestures. In them were clutched bright, keen instruments that flashed in the sun. The being that was chained to the block before the master was a man. His brown face was twisted with agony. Red blood dyed the block. Vivisection, born not of cruelty, but of the burning lust to know the unknown.

During the twenty seconds or so which was the full duration of his fantastic experience, Kent Marwell almost forgot that he was here in the fetish house of the Pygmies.

But "Mugs" Corliss brought him back to reality.

"Let me look, Peewee!" he demanded. He had read awe, consternation, and horror in his companion's features; and he wanted to glimpse the mystery, too.

More than a little dazed, Marwell handed the bell-shaped apparatus to his friend automatically, as if he were a sleepwalker receiving a sudden command.

Corliss peered through the lenses. And for several seconds he beheld the same bizarre marvels that Marwell had seen. Then, quite abruptly, the view reddened and faded out.

"It's gone, Peewee," he said.

Marwell had recovered himself enough by now to be normally, if greatly, excited. "Give that—that devil's spyglass back to me!" he cried. "I want to see for myself what you've done to break it!"

But Corliss, similarly excited, did not comply. Instead, as his smaller companion reached eagerly toward him to wrench the apparatus from his hands, he retreated, backing through the door-

way of the shut and out into the open.

"Wait a minute, Peewee!" he protested plaintively. "I didn't do anything to the contraption!"

Kent Marwell rushed after him in pursuit. And Pedro, the speechless, perhaps attracted by what seemed to be an impending scuffle, deserted his position beside the wall and came loping toward the two white men.

MARWELL had seized the device in Corliss' grasp now, and for a moment the pair tussled for possession of it. There was no real rancor in their difference; they were like a couple of small boys in an argument over a treasured curiosity.

But Marwell's fingers came in contact with the lever behind the grip of the thing. Before he knew what had happened, the lever was fully compressed.

There was a flash from the lensed muzzle of the apparatus. Invisibly in the intense sunshine, a slender pencil of rays shot from the device, and made a dazzling spot where it touched the ground.

Had Corliss and Marwell remained motionless after that, no harm would have been done; but their scuffle could not end instantly. There were the natural body reflexes of straightening up to regain equilibrium. And it took a second for Marwell's mind, a bit blurred by novelty, to realize the need of removing his hand from the lever. And so the slim beam swung through a swift arc before it was extinguished.

And it touched Pedro's shoulder. The grotesque Indian voiced a choking gurgle of agony from his paralyzed throat. Then he bounded aside.

The whites looked at their guide.

Pedro held a gnarled hand clamped over the seared spot on his shoulder. His small eyes were the only portion of his mutilated visage that could register emotion, and in them there was more



than a look of pain. Black, vindictive hatred was there, too; yet it did not seem to be directed at the men who were responsible for his recent injury, for his gaze was not turned toward them, but toward the door of the fetish house, where, beyond the now rumpled jaguar-skin hanging, the black cube was dimly visible. And his eyes seemed to bore even beyond that, into a time that was dead.

However, the two youths did not notice this; for their attentions were held by more important details of the episode.

"Jiminy crickets!" Corliss croaked. His exclamation sounded curiously grotesque and inadequate.

Marwell turned toward the guide. "Sorry, old fellow," he muttered in English. "We'll fix up that sore shoulder for you."

John Corliss, who had retained the alien instrument of destruction after the scuffle, laid it carefully on the barren ground. Together he and Marwell examined Pedro's injury. It was slight, but it revealed pointedly the capacities of the strange weapon. The wound was a narrow mark, charred as if made by a rod of steel, heated in a forge.

THEY procured materials from their first-aid supplies and dressed the wound. Pedro's eyes softened, like a fawning dog's, and curious cluckings gurgled in his throat. He was not angry with his masters. But when they were finished with their task, he tried to lunge for the weapon.

"What's the matter with you, you fool?" Corliss growled.

"Leave him be," Marwell advised. "He won't bother us if we keep an eye on him. Let's see if we can figure out how this machine works."

He picked up the weapon from where his companion had laid it. Now he unfastened the clasps which held the cover, at its larger end, in place. The entire back of the apparatus came away, re-

vealing a hollow interior, quite like that of any ordinary camera. The thing which was most provocative of interest remained fastened to the cover.

It was a large disk, slightly concave, and two inches in thickness. The men touched its surface, which was as smooth and cool as polished glass. But it was dead-black. There was not the faintest suggestion of reflected highlights.

"What do you make of it, Ken?" Corliss demanded.

Kent Marwell's brows crinkled with thought. In his mind, the skeleton of an idea was forming.

"Wait, Mugs," he said. "I want to see what several minutes of exposure to the sun will do to this disk."

From time to time he touched the smooth surface gingerly.

"Still cold," he muttered at last. "The sun's rays don't warm this plate at all; yet, obviously, it absorbs them. Anyway, not a trace of visible light is reflected by it. Otherwise it wouldn't be so intensely and completely black. John, I think I begin to understand the principle of this dinkus. The pictures we saw gave me the idea. This is the way it's charged: by exposure to the sun! This disk stores solar radiant energy in some manner, not as heat, of course, but by changing it into some form of potential energy with which we are probably not acquainted. When you put this plate back into its normal position in the front part of the apparatus, and press the lever, you get the radiant energy back much more swiftly than it was absorbed. That is one reason why the beam can burn things like it does.

"Then, too, you'll notice that the disk is a little bit concave; that would tend to focus the rays to a point when they reached the forward lenses. The lenses straighten them out, so that they become plane or parallel, with no tendency to spread or converge. Thus they can be projected in the form of a slender and highly concentrated beam."

"But the pictures, Peewee," Corliss protested. "Why did everything in them happen backward? Anyway, what caused us to see them when we peeked through the front lenses? They must have come from the disk some way, since it was right behind the lenses. Still, we can't see any pictures at all now. The disk is blacker than the ace of spades! How is that?"

Marwell almost chuckled. "Remember when we first found the thing?" he asked. "I was fussing with the lever. I didn't press it much—just enough to release the tiniest bit of stored-up rays. But you can see what happened."

HE pointed to two thick wires, arranged in the forward part of the apparatus in such a way that, when the cover bearing the disk was in place, the ends of the wires would touch the edges of the disk at opposite points in its circumference. The other ends of the wires were embedded in a small, black cylinder into which the acting end of the lever, or trigger, disappeared.

"We'll call the cylinder the 'exciter,'" Marwell went on. "When I pressed the trigger that first time, it went into action a little bit, exciting the disk so that it emitted a minute quantity of its stored energy.

"When I released the trigger, the process didn't stop immediately. Due to some peculiarity doubtless inherent in the elements involved, there was about a minute of 'hang.' That was when we saw the pictures. Since the light waves that brought them to our eyes, were plane, and sufficiently concentrated, the view was clearer than it would have been without the lenses.

"And now for an explanation of the pictures themselves. When the disk absorbs the sun's rays, it, of course, absorbs an impression of the sun's image, as well as impressions of the images of the various surrounding objects that are capable of reflecting light. For

storage, the light waves are converted into some other form of impulse, which, during the process of absorption, sink into the disk at a constant rate, and at an angle corresponding to the angle at which each light wave struck the disk's surface. That, anyway, is my conception of what happens.

"Then, when the plate is acted upon by the exciter, it gives up its images. If you can imagine a mirror whose reflective action can be delayed indefinitely, you have a crude analogy of what takes place. Only, since the last images to be absorbed, are given up *first*, and the first last, the sequence is, of course, in reverse. But the apparatus is clearly intended for defensive and offensive purposes anyway; and the fact that, while absorbing sunshine, it also receives visual impressions, is probably just a logical, coincident property of no importance. That's about all I can say."

JOHN CORLISS nodded acceptance of his friend's explanations. "Let's try pressing that trigger down a little again, Peewee," he suggested. "Just to take another look at those pictures. We might learn something more of where this weapon was made, and by whom."

"No time now," Marwell replied, nodding toward the forest, beyond whose dark screen of foliage the signal drums still muttered. "There's hell ahead of us, and we'd better let the only thing we've got for defense charge up as much as possible. I'll not be too hopeful even at that. The imps must know a lot about our heat gun, because it was in their fetish house, and it probably won't scare them. And I don't expect too much from it, anyway—not in thick jungle, while fighting an enemy that does its best to keep hidden. Frankly, we'll do good to last out through the night."

He propped the disk so that its surface was exposed exactly at right angles to the glare of the tropic sun.

Corliss shivered involuntarily.

"Maybe we ought to start back now, Pee wee," he said.

His companion scoffed. "With sunset a couple of hours off, and thirty miles to go to get to Fargo's camp?" he questioned. "To my sins we've added desecration of a sanctuary to Pygmy gods. I think we'd better stay where we are. At least we have stone walls to hide behind here."

Corliss and Marwell prepared a frugal meal. Pedro ate with them, munching his food with toothless gums, the while his gaze wandered back and forth from the fetish house, with the mysterious black cube inside it, to the weapon, lying dissembled on the ground close at hand. The whites were suspicious that he would attempt again to seize the apparatus, and so they kept on guard. It would not do to have it fall into his hands, even for a moment. In this event, there was no telling what might happen.

But though he several times seemed on the point of making a lunge, he did not move from his crouching position. Yet his eyes were squinted with a subdued and watchful malice. Wild jungle beast that he had so recently been, it was no wonder that the white men found him difficult to understand.

The air seemed charged with a tension that was only waiting for dusk.

The whites conversed in low tones, discussing unnameable things. Something from the region of the stars had touched this place, they knew. It had come, it had studied Earth and its living creatures, it had left its mark, and it had gone, probably never to return. The thoughts in the minds of the two men were grotesquely unlike any that had ever been there before.

After a while the sun declined behind the macabre and ghoulish tracery of the forest. Shadows came, stretching long, gray arms across the reddish floor of the amphitheater. The planet Venus gleamed in the west.

Soon objects were no longer distinctly visible. Shapes could move stealthily now, and only the most watchful gaze could detect their presence.

Foliage quivered here and there. Curare-impregnated darts flitted noiselessly through the air, seeking to prick the skins of the three who crouched beleaguered within the barriers which the unknown visitants had erected around their camp decades ago.

Corliss and Marwell had reassembled their weapon. Now they paced ceaselessly around the walls, watching.

Kent Marwell held the strange heat gun. Several times he held the small, lensed tube of its sighting device to his eye, trying to become accustomed to its intricacies. Finally he pressed the trigger, after aiming at a spot in the forest barrier where he had twice seen suspicious movement.

A THIN ROD of intense light shot out. The haze in its path glowed like tarnished silver. Flitting insects reflected the glare like bits of incandescent magnesium, before their smoking bodies dropped to the ground. The beam seared into the green foliage. There was a gurgle of agony and a thrashing sound. Then silence.

It was quite dark before the Pygmies ventured another advance. Once more they were repulsed by the science of a race about which the present wielders of the weapon that hurled back the stored rays of the sun knew almost nothing.

The attempts to storm the citadel became more frequent. The moon rose, shedding soft radiance that worked a deceptive and beautiful magic over the bizarre scene. Little bodies slithered, like slinking and malicious elves, from shadow to dense shadow, now working their way closer, and now retreating to safety—now approaching from this angle, and now that. It was an interesting, if dangerous, game.

The defenders might have allowed them to make a rush had it not been for the menace of the darts from the blow guns. Because of this, it was necessary, always, to keep those tiny warriors at a distance. And to do so consumed much of the cameralike weapon's store of energy. Probably that store had been considerable even before the men had set the black disk in the sunshine; yet it promised to be insufficient to meet demands put upon it. Time and again either Corliss or Marwell discharged from the apparatus a searing shaft of solar radiations.

Dragging hours went by. Somewhere in the distance a jaguar grunted. The low, glassy walls of the citadel brooded like some sprawling gray monster under the moon. And the besiegers, lashed to fury by the deaths of several of their companions, continued with their grim work.

The air was growing cooler; and a thick, white, strataform fog was collecting in a damp hollow at the edge of the forest.

Dawn was not far off when Marwell and his companion discovered what they had feared. The power of their weapon was definitely waning. Its path through the mist was less bright, and though there was still danger in it, the Pygmies had grown bolder, sensing that the time of victory was almost at hand.

"It won't be long," Marwell said.

He bit his lip, trying to suppress the visions that persisted in crowding into his brain. Should these little brown devils capture them alive—a result which was almost certain—two white men who had killed some of their brothers could expect a slow and ghastly revenge at their hands.

CORLISS and Marwell had almost forgotten Pedro's existence. Now, however, the speechless Indian touched Marwell's shoulder to attract his attention. Pedro whimpered with plaintive

excitement, and pointed toward the layer of fog in the marshy hollow.

Neither of the whites could see anything significant there. No Pygmies had invaded the fog; for to do so, far from providing them with concealment, would have silhouetted their forms against the milky mist.

"What's the matter, you fool?" Marwell demanded irritably.

The weapon in his grasp flashed again. There were howls of pain from the fringe of the forest; but none of the attackers dropped. A momentary exposure to the now diminished rays was no longer sufficient to kill.

Encouraged by this discovery, the little men launched a sudden, fierce rush. Nearly a hundred of them were running toward the ramparts from all sides.

And suddenly Pedro went berserk. Without a sound he leaped upon Kent Marwell. So swift and unexpected was his attack that the white man had no opportunity for defense. He toppled over. The bell-shaped apparatus was torn from his hands.

Swiftly Pedro was up. His fingers fumbled clumsily with the screws which controlled the adjustment of the lenses at the front of the weapon.

Corliss would have attempted to restrain him; but then a vague awe born of a belief that the Indian had a reasonable purpose checked the impulse.

Cursing, Marwell had now climbed to his feet; he too was halted, as if by a spell.

Now the weapon came up, supported by Pedro's gnarled arms. The glinting lenses, fixed in a new adjustment, were pointed toward the white strata of fog. The trigger was compressed.

It was not a slender cylinder of rays that issued from the muzzle of the thing now, but a broad cone, like that of a searchlight. Too scattered to be dangerous, it stabbed into the dense translucence of the mist, which assumed the character of a white screen.

And on this screen phantasmal shapes took form like the visions of a mirage. They were blurred, as if out of focus; but their unearthly majesty was clearly discernible. The spectacle was like that of an episode of the Arabian Nights, crystallized into quasireality.

THERE was a great, red sun, wallowing, now, like a fiery bubble, in the mist. The pinnacle of a huge tower was pointed toward it at a crazy angle; for this was evidently a skyward view. On the multiple terraces of the tower, metal Titans were congregated. Things with huge beaks and leathery bodies that seemed to possess characteristics of both bird and bat crouched among them.

The few movements that were made were reversed, as were those of that other vision. And they were also very swift, for the device that produced the pictures projected them much more rapidly than they had been absorbed.

For perhaps a dozen seconds, Marwell and Corliss found speech impossible. Awe seemed to paralyze their throats and tongues.

"Just—just like a magic lantern, Pee-wee!" John Corliss stammered at last. "That tower, that sun! Another world, another solar system! The heat pistol was charged on that world; and there was a residue of the original charge left in the thing!"

Marwell was calmer. "Yes," he said "The pictures were stored in the black disk. Pedro changed the adjustment of the lenses. That did the trick. The whole business is quite easy to understand now. Pedro was one of the Indians those monsters captured to use as slaves while on Earth. They experimented with him. That is why he's so scarred. But he was intelligent enough to learn things from them. This is an example of the knowledge he gained."

"The Pygmies!" Corliss cried.

Screaming with fright, the attackers

were scattering in every direction toward the jungle. Terror at the uncanny phenomenon held them in its grip. To them this was doubtless a visitation of their gods. Probably they had known of the alien weapon's power to kill, and had not been afraid to die thus. But the mirage—this was a different thing; and that they had previously stumbled upon the means of producing it seemed unlikely.

The miracle was waning now, growing redder and dimmer. Almost the last dregs of energy in the weapon had been used up.

Pedro released his grip on the trigger. Once more his fingers twirled the adjustment screws of the lenses. Then, his face a fiendish mask of hatred, he directed the weapon toward the grass hut at the center of the inclosed area. A thread of light, fine almost as a hair, flashed toward the flimsy structure. The dry tinder of it took fire; for though there was almost no energy left in the weapon, still there was enough to produce for a moment, an intensely concentrated thread of rays.

Pedro clutched his two charges and pushed them to the wall, indicating that they were to climb over it. They obeyed, for reason told them that now they were in little danger of being attacked.

Urged on, they ran toward the jungle. And their strange guide, bearing an invention of another people, loped awkwardly but swiftly in their wake. None of their former enemies hindered them.

THEY had progressed several hundred yards along a jungle trail, when, from behind them, came an explosion of a magnitude such as they had never before experienced. The concussion of it was so terrific that they seemed not so much to hear it with their ears as to feel it with the flesh and bone and nerves of their bodies. The blaze of it was utterly blinding. It lighted up the

whole jungle and the whole sky more brilliantly than a hundred suns.

All three men were hurled prone by the blast of air that rushed over them. Corliss, huge and powerful, was the first to pick himself up. Blinking his smarting eyes, he looked behind. From the rear now came a steady, incandescent glare, stabbing through the fantastic tracery of black vines and trees. In the flesh of the three men was a tingling sensation which may have betrayed the presence of some unknown and perhaps dangerous radiation proceeding from whatever violent process was in progress behind.

In the light, Corliss looked like a bewildered bull. "What the devil, Kent!" was all he could say.

Curiously, Marwell seemed calmer than ever before. "The black cube, I think," he said. "The burning hut ignited whatever it contained. A kind of explosive, maybe, to propel a—a sort of contrivance for traveling between the stars. The—the visitors must have forgotten to take it with them when they left. And Pedro knew about it. He knows a lot of things."

"We ought to go back for a look at the wreckage, Peewee," Corliss said.

"Not now," Marwell replied. "We couldn't see or learn a thing. And the

glare might blind us permanently. We can come back from Fargo's camp in a couple of days, after this place cools off; but we can't expect to find much more than a blasted hole in the ground. The adventure's over."

Corliss and Marwell looked at the monstrous little man who was their guide. His eyes were bright, and there was an air of animated satisfaction about him. Perhaps when he had ignited the hut he had thought less of thoroughly scaring the Pygmies than of evening odds with the unknowns. Childish, primitive psychology. Vengeance upon an unreachable enemy by destroying some possession of that enemy.

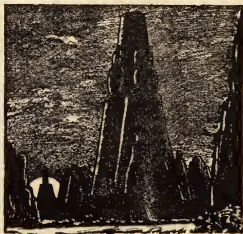
But the ghastly scars that covered his withered, brown body would remain with him until he died.

The three stumbled on toward the camp of Fargo, thirty miles to the west.

Something prompted Marwell to attempt to wrest the weapon from Pedro's grasp. His move was unresisted; he held the thing in his hands.

Suddenly he laughed. "You know, Mugs," he said in a bantering tone, "I wonder if the cops back in Topeka will soon be wearing weapons like this one."

Corliss grinned. "Hope so," he replied. "Because if they do, maybe I'll get my two hundred bucks back."



# Mathematica Plus

*The sequel to Mathematica*

by John Russell Fearn

**P**ELATHON, denizen of a world and universe unknown, sat in brooding calm at the rear of a dry and dusty cave, every detail of his pinched face and intellectually bulging forehead clearly illumined by a curiously dazzling bright substance that gave forth no heat.

Upon either side of him, reluctant to disturb his profound mental researches, sat the powerful figures of Dr. Farrington and—at the risk of sounding egotistical—myself. Both of us were more godlike than any man known on the Earth, attired only in such rough garments as modesty demanded—and both of us deathless, given eternal life in a world of unknown and stupefying complexes.

Already I have written at length of our sojourn to the beginning, and of our discovery of the supreme mathematician of the universe. Together, we three had lived and died through a mad chaos of living figures and intelligent mathematics, to conclude our first experience as indivisible, eternal beings, in a world we had hoped would be our own Earth. But no! We lived now in our deathlessness not on the Earth, but on a world in a universe unknown.

Through the cave entrance, in the valley below, we could distinctly see a city, hovering as though without foundations—a city of phantasmal changes that drifted perpetually through crazy, indeterminate sequences. A city wherein nothing was solid, where the people were lines and bars that rotated and shifted in mid-air, or else moved with stupendous velocity to unknown destina-

tions. This, then, we were faced with, unable to understand the first vaguest implications of it all—

"WELL" commented Farrington at length, breaking the long silence, "we've been stuck here about a week, and we don't seem to be any nearer. That infernal city gets more mystifying the more one looks at it. We've just got to think up something, you know," he concluded seriously. "We can't sit here for all eternity."

I nodded slowly and then turned to the silent Pelathon. "What do you think?" I asked him quietly. "You've been down there—stolen some of this perpetual cold-light substance, and writing materials. You found its peoples cruel and heartless, apparently—but that surely doesn't entirely excommunicate us from them?"

Pelathon aroused himself, with some effort, from his profound meditation. His little eyes, almost concealed in that pinched face, regarded us each in turn.

"Even if I have been silent, I have not been idle," he answered pensively. "Those people down there are, of course, quite unlike anything in existence in your kin or mine. They are far more advanced than either of our races. We find here a world resembling your Earth only in the matter of air and size: not that either of these things matters since we are quite deathless—but at least we know that the figures of Si-Lafnor, who created this universe early in the chain of universal mathematics, were correct in that one respect.

"As regards the people, I am baffled.





*Then, presently, even that passed, leaving nothing but a swirling  
cosmic dust, which slowly changed—*

I cannot understand what Si-Lafnor did to create a species so utterly unlike Earthlings. Allowing for the widest margin of error, which I have done during my own calculations in these last few days, I cannot by any stretch of deductive reasoning reconcile these people. They exist, as I see it, in a state that lies just between matter and thought, just as in a normal Earthling there is a condition between man and boy—adolescence."

"And that means what?" asked Farrington quietly.

"It means that these people are masters of matter and thought at will, are products of very high mathematics. That accounts for the shifting and changing outlines, responding to their every thought change. It accounts too for their transparent city. The haze that hangs over it—the constant suggestion of unreality—is, I am now convinced, purely occasioned by the barrier line which eternally hovers between matter and mind.

"This cold-light substance is alone proof of the brilliance of these people. It is composed of a chemical foreign to our knowledge, which possesses an atomic constitution that vibrates at a steady speed. This vibration, transferred to ether, continues ceaselessly and gives rise to the sensation of light without the longer wave lengths of heat. This, you will realize, is positive proof that these creatures *are* semimaterial in that they have visual organs akin to ours. Otherwise they might construe the sensation we call light as something else—"

"True enough," Farrington nodded, and reflected for a space. Then, "Well, what do you propose we do?"

"There is no move we can make except investigating the city," Pelathon replied, rising to his feet. "At first I was inclined to the belief that the people are cold and cruel—now I think that that view might have been occasioned by

their complete and absolute detachment from all things mundane. Whatever it may be we have got to explore. Let us go."

HE PAUSED and waited as a rotating bar, a delicate, silvered creation of indescribable delicacy, merged suddenly out of the air and floated toward us. We realized it was one of the grotesque inhabitants of this impossible place. Yet, even so, there seemed no reason to fear danger. We were indestructible!

As we watched the object it contracted to a pin point, then changed into a square, and lastly back into a rotating bar. Gradually, upon our expectant senses, there crept a beating and, at first, unintelligible rhythm. It was a truly extraordinary sensation—a steady and unrelenting beat of heart and pulses, a throbbing of blood vessels in our brains.

Before our eyes, as the pulsating continued, the vision of the city melted and faded away. Even the light waned and was replaced by an intense and overpowering darkness. I felt an instinct to cry out, but I could not. Something was holding my mind and body in chains. I remember that I wondered briefly what had happened to Pelathon and Farrington, then, oddly enough, I ceased completely to care. They lost all interest for me.

Instead my mind was undergoing a peculiar but trenchant metamorphosis. It was as though I was *inside* something of Stygian gloom, sensing my presence from the viewpoint of somebody else, and yet accomplishing that detection purely by the constant and all-pervading rhythm! At times it changed into a pattern of cross beats, but in the main retained its ordered persistency.

Then, at last, I began to recognize in that beating—or thought I did—a formation into either thought vibrations or words. Whichever it was, information

was most certainly passing into my vaguely terrified brain.

"It is indeed a rare circumstance for one of us to come across three material creatures who cannot be broken down and absorbed by our minds! To you, material beings, the process would perhaps be called digestion. With us, such a procedure is relegated to the long-dead past when pure materiality inhabited the universe. I have endeavored to mentally digest the three of you and so absorb your respective knowledges and add them to my own—but without success. You are different, and, as such, are worthy subjects for experiment. It is the first time that uncanceled units have entered our realm. Prepare then for——"

The rhythm changed from its slow and funereal beat into one of extreme speed. There was no sense of motion—indeed no sense of anything at all save that impenetrable eldritch darkness. Being inside the intellect of the creature was something beyond my conception in any case. I waited patiently, and at last there grew out of all that blackness a sense of light, rapidly taking on form until I realized that my body had returned to me and that I was standing, Pelathon and Farrington on either side of me, beneath a titanic, almost transparent ball, supported upon massive, eight-foot thick trestles of some unknown metal.

The rhythm ceased.

"What now?" murmured Farrington, standing tense and expectant, then looking above him at the colossal, poised ball. "Where are we, anyhow? Looks like a hall of sorts. Machinery over there—nobody in sight, though——"

He relapsed into silence. The rhythm had returned.

"You are mistaken, my friend," it commented, every tiny detail of the observation and every facet of its implication registering upon our brains. "The intellectuals are about you, as-

cended now into a higher plane of mathematics and thought where they are invisible to you. Know you that the chosen three thousand watch your every move, study your every reaction, know your every thought.

"For countless æons the etheric absorber, which you behold above you, has drained the knowledge from the minds populating other planets in this universe, has supplied to us a great and constant stream of accumulating knowledge. How much easier then does the absorber analyze you—— Long since we digested all material creatures, transformed them into energy and absorbed their knowledge. But with you it is different. We are puzzled, and yet interested."

"Why?" Farrington demanded almost aggressively, looking about him in annoyance and meeting naught but emptiness.

"Clearly you are not of our universe," the rhythm resumed. "It is an undeniable fact that within a universe every scrap of matter can exchange with energy, and energy with matter, yet with you it is different. You cannot be changed. You belong to another universe, are utterly apart from this one, unaffected by whatever happens to it. That, in itself, is, to us, a gigantic enigma. Whence come you? We seek to know."

"I thought your precious etheric absorber read our minds for you?"

"Truly, but only the thoughts contained within your brains. How are we to know those thoughts are correct? We see in them only vague and cloudy suggestions, devoid of concrete fact."

FARRINGTON smiled faintly. "We have nothing to gain in withholding information from you, but before we really explain we'd like a few explanations from you."

"What do you wish to know?"

"What is this planet? Who are you? Tell us all about yourselves."

"Upon this planet, known as Xulon, there once existed a material race, not altogether unlike you. We, pursuers of pure intelligence, forsook our own planet when it became unsupportable for our type of life, and came here, rapidly digested the knowledge of the materials and transformed their bodies into energy, after absorbing the most valued parts of their minds, such as they were.

"For a long time we have been masters of ether control. We have means of tapping the vast radiations and powers that eternally pass through the substance of eternity. We have, by this method, drained every known planet's population, near or distant, of all the knowledge possessed by it. That is to say, that the ball above you is basically magnetic and absorbs all the radiations of ether cosmic rays, light, and so forth. Within these various radiations there are contained the outflung thoughts of the inhabitants of other worlds, which we sift from the assortment of superfluous radiations we also obtain.

"To make it clearer to you, a thought, once expressed, travels eternally through ether, becomes indeed part of it, combines with radiations and every other known etheric peculiarity. Hence, tapping thoughts from other worlds, far or near, is a child's problem with the correct apparatus.

"That is what we have done with our ether absorber, converters, and other machinery. Little by little we are evolving, by the knowledge we've attained, into pure intellectuals. As yet we still cannot entirely throw off a matter formation—hence our thoughts express themselves materially. Our city, everything you have seen, is pure thought. We understand, too, dimensions, space and time. Of space there is infinity, but of time nothing."

"Nothing?" Farrington questioned.

"There is no such thing as time—at least, that is what we believe. Why, you may eventually learn. You appreciate

now how we can become invisible or visible at will by altering our thoughts; you will appreciate too how we can digest energy as you materials digest food—and, too, you will understand that we speak by etheric rhythm.

"Our thoughts form vibration on this medium which, by the natural formation of your very materialistic brains, resolves into a normal understanding, much the same as the collapse of electrons in a star creates etheric disturbances which your eyes construe as light.

"We, the chosen three thousand, are future lords of the universe. We seek to understand what ether is, indeed if it even exists, and the purpose behind everything. Why things came into being at all, and how they will end—Can it be that you have been sent to us, obviously beings from a universe outside of this one, to aid us in our search?"

"We are seekers after information, just as you are," said Pelathon slowly. "The information you have given us is interesting, but it proves you to be a race which is entirely self-centered and relentless. Where was your right in destroying the proper inhabitants of this world?"

"One does not question right, when in possession of superior knowledge," came the response. "The greater will forever crush the lesser; that is inevitable. I read from the minds of the two Earthlings that upon their planet they indulge in the slaughter of animals that their carnal cravings might be appeared. Where then is the difference between their methods and ours?"

"In any case we needn't enter into that," said I, rather taken aback by the inhuman logic of the invisible's observations. "You are correct in your belief that we don't belong here. Our coming was a gigantic accident. Originally we belonged to the Earth, my friend and I.

"We found a thought-duplicating metal which, by thought, brought this man Pelathon to us from his own far

distant planet and universe. He sought the beginning of creation, and with him we went down to the creator of the Earthly universe, a being named Si-Lafnor.

"He, in his turn, sought the cause of his universe, so we went down again to the supreme mathematician, creator of creators, and there found that all universes are purely a figurative formula traced on an endless background of etheric abstract—a sort of mass of multiplying figures.

"In that journey we lost our own universe, but Si-Lafnor promised to recreate it. He did so, but with defective figures, which brought us to here—a universe of which we are no part. Doubly difficult is our position because, to escape the annihilating force of the supreme mathematician, we were made uncancelable by Si-Lafnor. That is, built up of figures which will not cancel, and therefore we are immortal. That is our story. Our universe has gone—forever."

There was silence.

THEN, suddenly, the outlines of our surroundings changed completely; with the quickness of a snapping camera shutter the ether absorber vanished, and the hall of machinery. Instead we found ourselves in a black-draped room—though we had certainly not physically moved a fraction of an inch—facing an Earthly-looking man of indeterminate age. His face was strong and purposeful, his forehead well-developed and his eyes and hair jet-black. Quietly he motioned to chairs that were mysteriously behind us, and we sank into them.

"I have been chosen by the three thousand as the interpreter of their wishes," he explained steadily. "You may call me 2816, since that is the unit of intellect I occupy in my race. My existence is that of an interpreter and, as such, I am addressing you, devoid of

all personal bias and prejudice, voicing purely the wishes and thoughts of the chosen. It is better that I assume the form of an Earthling in order that we may more freely understand one another; ether rhythm, whilst being the only universal method of communication, has also certain disadvantages when there are express wishes to be made clear."

"What are the wishes?" Farrington asked guardedly.

"The chosen have understood from your story that there is a mathematical source to this universe—indeed to all universes. They have suspected such a fact for a considerable period and, for the great truth you have brought, they tender their eternal recognition. But, they ask if you are prepared to advance science further and accomplish, by that very process, a dual move—likely to benefit the chosen and ultimately yourselves."

"Meaning what?"

"To these figures there must be an ultimate solution. What is the end of it all? That is what the chosen seek to know. Listen carefully! None of the chosen, even though he possesses the knowledge of how to accomplish the feat, dare travel to the end, because if he did so he would dissolve at that end and never return to tell his story. With you it is different. Time, which does not really exist, space, matter and energy can warp and vanish into unthinkable extinction without you being affected, because you are not a part of it.

"Therefore, *you* could go to the end and bring us back the story of what you have seen. Then, and only then, will the intellectual puzzle of the chosen be complete. They know from you the beginning—but the problem is not solved until they know also the end. You understand?"

"True we are immortal, can stand the cold of space, airless conditions—everything. But how does it benefit us?"

"That will come afterward, as your reward for your services to us. Everything relies on the answer you will bring back. If the answer is what we expect, then we can probably return you to your own universe and world."

We said nothing.

"Reflect upon the possibilities," 2816 resumed. "You had the courage to seek the beginning, knowing full well—or at least thinking so—that it would mean the forsaking of your own universe. Why then can you not seek the end when you have our assurance of safe return to your respective worlds?"

"Certainly we can do nothing here as we are," Farrington admitted presently. "What do you two say?"

"I don't quite see how we can possibly be returned to our own universe, no matter what answer we might bring back," I remarked. "Our universe is dead."

If 2816 had been capable of smiling he probably would have done so then.

"You heard the rhythm of the chosen; you heard the remark that time is a non-existent thing. We shall prove to you the truth of that—that it is not a dimension, not a spatial state, not any thing. Long ago we ceased to use it in our cosmic calculations. You cannot be expected to understand the underlying truth of the observation until you have tested its efficiency for yourselves. Your universe never died, you never moved from it—but why and how is left to the chosen to explain. I merely interpret. Now, your decision? Yes or no?"

"And the alternative?" Pelathon questioned gravely, pursuing as ever deeper issues.

2816 shrugged. "What alternative can there be? We can do nothing to you—you are free to do exactly as you choose. We can inflict no punishment for refusal to obey our wishes. You will inflict that on yourselves. If you refuse this request of the chosen it will never be extended again and you will

spend your immortal lives trying vainly to find the way back. The chosen believe that you will not prove so foolish."

"The chosen are right!" Farrington declared flatly. "We accept. At least we can't be any the worse off. What do you two say?"

Pelathon and I said nothing; we merely nodded gravely. Common sense forbade any other course of action.

## II.

SO we cast in our lot with the intellectuals of Xulon, and during the days that ensued were treated to a demonstration of their terrific scientific knowledge and prowess. Pelathon, genius though he undoubtedly was, found it more than he could manage to understand the construction of the infinity globe, as the chosen called the gigantic sphere in which we were to make the journey to the end and back.

In essence it operated much the same as Pelathon's own machinery, when we had originally left the Earth in search of the beginning, but in this instance the driving mechanisms added figures instead of subtracting them, utilizing the arithmetical ether as the basis upon which to work and, hence, the machine would adjust itself to the constant accruelement whilst we, denizens apart, would remain exactly the same size whilst the machine itself expanded about us to incomputable dimensions.

"Pelathon," I said aside, as one day we watched this monster in construction beneath the powers of the invisible intellectuals, "what do you make of the conception that time doesn't exist? It's all nonsense, don't you think?"

His little eyes sought my face. "That depends, friend Vernon. For the moment I was strongly inclined to disbelieve, then I remembered that these people are enormously advanced in knowledge beyond us and, as such, there may be something to their theory.



"Frankly I now lean to their view. In an unchanging universe, where matter and energy forever maintain the perfect balance, it is, in cold fact, very hard to appreciate where the time element does exist. As I see it now, enlightened by these people, time cannot exist in an unchanging universe, where nothing can be added or subtracted. Since neither of these two states are permissible of annihilation without destroying the whole, they of themselves negate the possibility of time."

"Hazy, but I gather the drift," I said. "You'll be telling Farrington and me next that we've never done anything at all during this trip! That all this is one grand, terrific illusion."

Pelathon said nothing, but I detected a peculiar expression on his little face. He turned aside to watch the assemblage of the mathematical machinery within the monstrous globe. I watched too, pondering over matters, wishing I understood more of the laws relating to space and time.

I ruminated thus through the days and nights and arrived no nearer a solution, then, at last, I was forced to relegate it to a back shelf of my mind as the day for the journey's start arrived. The monster sphere was completed.

Under 2816's directions we entered the roomy control chamber and stood in a group on the softly padded floor, 2816 himself a little way in front of us. In silence he surveyed us from head to foot.

"Without your coming, this inestimable gift to the science of the chosen would never have been possible," he said quietly. "Because the chosen read from your minds, via the ether absorber, the mathematical nature of the machine that took you to the beginning, so they were able to conceive this mathematical machine to take you to the ending, and back here again. But with one difference! This sphere is remotely controlled by the chosen. You, of yourselves, will

do nothing save observe and study how the total of universal figures works out. When that total has been achieved, the machine will automatically return here and you will bring your story. Again the chosen thank you for your service. Now you must start."

2816 melted into thin air and vanished. Accustomed by this time to apparent miracles we strolled almost unconcernedly to the gigantic observation window of the sphere, turning our heads only once as the air lock automatically closed and sealed itself. Almost immediately afterward the amazing driving force of the globe began to function. The mathematical machines began their steady ticking and deliberate checking and rechecking; the converters throbbed with the low hum of perfect, steady-flowing energy.

IN the very center of the monstrous central power plant the living brain of figures, master controller of all the sphere's engines, began its dissipation and accrueement of invisible figures, absorbing and transforming, creating a slow and inevitable expansion as we began to move through the figurative ether toward the infinitely remote total of all things.

Silent, absorbed, we stood by that monstrous window, gazing out on the strange world of Xulon. As we watched, and the figures comprising it naturally added up to their final solution, we saw it apparently grow old, die with amazing rapidity, and become a dark, dead world. Then, presently, even this passed away and there was left naught but a swirling cosmic dust that slowly changed into the black invisibility of space itself.

I laughed shortly as I beheld these things. "Then the chosen say there is no time!" I exclaimed derisively. "Good Lord, this proves it! This machine is moving in time—must be!"

"No, friend Vernon." Pelathon shook



his massive head very deliberately. "Not time—only change! Indeed, hardly change even. No time has passed because this universe is, in essence, the same. Truly the world of Xulon has vanished, but the exact amount of energy remaining in the universe is unaltered. A matter world has vanished and changed itself into various forms of energy. Somewhere else, too, there has probably been an interchange—a re-assembly of the perfect balance. That, as I said before, is not time—only a change of state."

"It's too much for me," I grunted disgustedly. "To me, Xulon grew old. Still, I can see dimly what you're driving at."

Pelathon said no more and we turned our attention to the window again. Even as we did so the width of the window grew wider; the chamber in which we stood expanded, too, with a gradual yet inevitable progression. Adding to its own total of figures as it undoubtedly was, there was, of course, no other course for it to pursue if the constant level of the universe was to be maintained. For in proportion as the figures outside mounted up and reached their totals, so the balance had to be maintained by the expansion of the machine in absolute mathematical alignment. We, excommunicated from that universe and every part of it, were in rather an awkward position, gradually becoming Lilliputians in a steadily widening wilderness.

"Say, what's ultimately going to happen to this sphere?" I asked worriedly, looking about me. "If this is only the start of the journey, where are we going to be at the final total?"

Pelathon's face contorted into a smile, his rabbit teeth glinted in the light.

"There, I believe, the chosen made a gigantic blunder," he proclaimed calmly. "It was not my place to tell them, so eager were they to make this experiment—but I certainly believe that we shall

never return to relate the ending. At least not by going back."

"Meaning what?" I demanded. "What are you looking so smug about?"

"Forgive me, friend Vernon; I've no wish to irritate you. All the same I do believe we're entering on something remarkable. I can't be sure though until the journey is ended."

"Some help you are," I said, and turned back to my watching, my mind revolving round absolute paradoxes.

FOLLOWING the disappearance of Xulon into some indeterminate form of energy, there began for us a journey that was a complete chain of unexpected things, defeating by far that almost comfortable journey to the beginning. In that instance we had been in perfect tune with the altering conditions, but here we were faced with complex and unexplainable occurrences as we progressed through an endless expansion to that final and still incomputable solution of all things.

Gradually, through that ever-widening window, we beheld what was apparently the constant birth and death of suns, galaxies and multigalaxies, and enormous nebulae, all of these so unified in their mathematical position in endless space that it was hard to detect which was which. Monstrous chasms of star dust gleamed with a luminescence all their own in the profound immensity of space; island universes, mere shadowy glows upon this blackest-black background, shone from remote corners of the limitless expanse.

All of this was normal, understandable, much the same as photographs in an astronomy textbook. Here was nothing but what could be understood. Here lay the very material birth and death of cosmic energies, birth and decay in all its stark, unshorn reality. This much we could understand.

It was later that we came to face changes that baffled us. They came at

a time when we had lost all concept of our position in space, when the chamber in which we stood had become a vast emptiness, its walls hidden in remote distance, the curved ceiling incredibly high above us in an oddly malformed mass of shadows. So high was it indeed the lights within it failed to cast their glow. We stood there in silence on the gently expanding floor, Lilliputians gazing upon the farthest ramparts of changing infinity, before a window that stretched now for numberless miles.

Space now had indeed changed. The procession of birth and decay was over—a newness, something entirely unsuspected was occurring. The stars gleamed with a steady and unaltering light: nowhere was there a birth, nowhere a death, nowhere a blazing forth of unutterable brilliance to proclaim a new arrival in the celestial order of things, nowhere an extinguishment. Space seemed to have achieved one great steady level. But it did not last for long.

One by one the stars began to snuff out like candles—completely and utterly, as though an infinite circle were being drawn and closed about them, and within that circle every known energy and radiation was being obliterated. We watched, Farrington and I, open-mouthed, this slow advance of an unknown and complete annihilation. Pelathon seemed untroubled, only thoughtful, his little chin sunk on his narrow chest, brooding eyes on the strange change.

Still the infinity globe expanded, and as it did so the ever-narrowing circle decreased in width. Star after star vanished, galaxies and vast extra-galactic nebulae were swallowed up in the maw of that great and terrible darkness. Nothing seemed to withstand it, from the most brilliant incredibly hot sun to the weakest dead star. All, absolutely and completely, were being blotted out. And at last there was only one perfect

circle of stars; elsewhere, so far as the eye could see, was an absolute blank in which nothing—absolutely nothing—existed.

And, at last, even that final friendly circle passed, too. Space was empty.

"There is the ending," murmured Pelathon, turning at last, only vaguely visible to us now through the weak remote beams from our incredibly distant ceiling lights. "We have proven the second, and not the first, law of thermodynamics to be correct. The first law, as you know, maintains an eternal, changeless state; the second holds not with the destruction of energy as regards its amount, but in the matter of its form.

"Outside here we still have all the energy we had to start with, but it can no longer change. The vast mathematical formula has almost worked itself out to final cancellation, but even yet the total is not complete. The last ergs of energy are not yet spent. Ah! Just as I expected!"

WE LOOKED UP in alarm at that, Farrington and me, for simultaneously with Pelathon's last words the infinity globe began to rock and creak mightily. The far-distant central power plant was glowing with a brilliant green light; distinctly to our ears, despite the distance away, came the ever-mounting rattle and click of the checking mechanisms.

"The darn thing's collapsing!" I shouted hoarsely. "Pelathon! In Heaven's name, what's going to happen now?" I clutched his thin arm frantically in the gloom.

"Only that which I expected," he replied coolly, maintaining his balance with some difficulty on the rocking floor. "If for a moment we consider there is such a thing as time, the material weight of this universe has changed perpetually into radiation as we have progressed forward to this penultimate point. Ig-

noring the time factor, which seems the most logical thing to do, the figures that formed this universe have all been absorbed by that machinery! Everything has now been added up save the machine itself, and it is inevitable law that must also now pass away to complete the issue. We will be cast adrift. There can be nothing else. We do not belong to this universe."

"Adrift!" I gasped huskily. "In that darkness and friendless cold? Without light, heat, radiation—without anything?"



*This, then, we were faced with—unable to understand the*

Alone for perhaps evermore in an eternal sea of emptiness? Lord, no! My whole being screams out against it!"

Pelathon remained unmoved; his calmness was exasperating at times.

"You forget that the three of us are indestructible, surely," he commented.

"Besides, there is no other way—no other way," he concluded grimly, as we beheld the walls and floor of the infinity globe, dimly gray before us, begin to vaporize and reveal through their former solidity a vision of the infinite blackness outside.

"Pelathon, did you know this would happen?" I demanded of him.

"I admit that I thought it might, friend Vernon—that was why I said I believed we'd never return. A tree cannot go back to its seed—no more then could the remote control of the chosen on Xulon bring this machine back once it had reached the grand ultimate total. In space there is only forward—one



first vaguest implications of it all—

way. Just as energy always flows one way——"

He broke off and stood rigid as the walls began to vaporize further. Farrington, his face grim, came to my side and looked between his feet at the vision of impenetrable darkness below.

"Well, guess this looks like the finish," he muttered, evidently as completely unable, as I was, to realize we were deathless. "Good hunting, old man."

I muttered some husky response, then that which we were expecting suddenly happened. The infinity globe completely dissolved. Walls, floor, ceiling, machines all merged into one gigantic spurt of unguessable energy that instantly changed back into the perfect scheme of figures. We dropped into the infinite cold and darkness, aware of our former sphere as a slowly dying spot of light in the all-embracing dark. We had reached the ending, yes, but—what now?

### III.

WHY we did not encounter instant death the second we found ourselves free in emptiness is still a riddle that eludes me—though the solution was, I suppose, plain enough to be understood. Yet, so utterly paradoxical was its nature, I found myself flatly refusing to believe it.

For myself I realized, with a sudden cold shock of alarm, that my body had gone! Yes, my lovely, immortal form had utterly disappeared! I had apparently become a disembodied mind alone in an endless darkness, that had no depth, no substance, no form—was naught but a colossal, stunning vacuum. And yet my mind remained perfectly clear; there was no cloudy oppression, no sense of pain; only an awful and overpowering loneliness that suddenly swept in upon me. I was afraid of this terrible dark, this graveyard of stagnant energy.

Then, when I felt I could no longer endure the profound mysticism of it all, I distinctly knew the thoughts of Pelathon were registering in my mind. Had I been possessed of vocal chords I certainly would have emitted a yell of delight—or at least its equivalent, since there was no air.

"Have no fear, friend Vernon," his thoughts reassured me. "We are definitely proving indeed that there is no time. These occurrences are exactly as I computed to myself. We have all three of us lost our immortal bodies, which in the first place proves the very obvious fact that this spent universe is somewhere within your own body and mine. Otherwise we would not have been transformed to form the ultimate total here."

"But how comes it that our minds are not impaired? Surely they too should pass into the infinite and silent void that surrounds us?"

"Why should they? Thoughts, as you learned long ago, are purely figures, part and parcel of the surroundings we possess now. Long ago you died and lost your own bodies, but your thoughts lived on because they were the mathematical basis of your real entities. So it is again now. A sum of figures is active so long as it is adding or totaling up. When the total is reached the figures become inactive—but they are still there. That surely is obvious enough?"

"At the moment we have reached totality—all change has ceased, and yet the figures that form the emptiness itself are still there. It is inconceivable that this particular total can end here, unless indeed there really is an element of time. I believe there is not. I'm convinced of it. If that be so, then this ultimate total of figures must again change to form the basis of themselves."

"That too is inconceivable," came the vibrations of Farrington.

"Why is it? That figures still live

even when totaled up is an indisputable fact; we have a small instance of it in the fact that even now we can exchange figures in the form of thoughts. Nowhere in this vast space can a single formation of thought figures be dead. This space is one great sea of intelligence, drifting, drifting—— To what? To a state that must forever either prove or disprove the existence of time."

"There's an old theory, by Earthly scientists, that, out of the heat death of a universe, new protons and electrons must form," came Farrington's communication. "Is that what you mean, Pelathon?"

"Not altogether, but it is a possible simile. Out of figures, if there is no time, must be born something else, otherwise the figures themselves could never have come into being in the first place. Hence, out of this sea of intellect into which all figures have now been changed there must be born something. Do you not feel a steady movement? You cannot behold it because movement is only relative to its surroundings, and here there are no surroundings. Nevertheless, the conviction cannot surely be only my own belief?"

With that Pelathon's communication ceased and I dwelt upon the portent of his comments, gradually realizing that he had spoken truth. There was a sense of movement, a dim stirring in the eternal emptiness, a conviction of slow progress in a circular direction, as though moving toward some unguessable cosmic vortex. And, as the progress continued, I became aware of other things—of unexpected thoughts and conclusions.

Immense conceptions began to steal into the formerly locked chambers of my disembodied mind, concepts that at once both puzzled and appalled me with their immense and infinite grandeur. I was becoming, as I drew nearer to that unknown nucleus, a god—a mind dominating all others, receiving a constant

and steady flow of tremendous mathematical thoughts in the midst of which I saw, crystal clear, the beginning and ending of all mental conception.

Dimensions, space, figures—they were childish; things now perfectly understood—and yet, writing now, with none of these attributes, my memory is unable to recall a single one of those colossal discoveries. At that time I was literally deified, and so, I found later, were Pelathon and Farrington.

Then into the midst of this accumulation of thoughts burst another communication from Pelathon.

"I was right! The vast thoughts that are in this universe are converging into one enormous central formation—a new arrangement of figures which must lead to——"

His communication ceased. In any case, I was not registering any more. The sense of movement was now tremendously obvious. Thoughts—ideas—problems solved even as they began. Time, space, energy, figures, rattled across my disembodied mind with bewildering reiteration.

Faster—faster, toward the vortex. Faster. Knowledge swept in one gigantic peak——

Then I was alone. Puny and tiny again—every scrap of that erudition torn and whipped from my remembrance.

I CAME to myself by very slow degrees, out of that impossible and cloudy darkness, a darkness blacker than death itself and filled with thoughts now beyond all concept.

The first thing that astounded me was the realization that I had a body again—a clumsy body, badly formed, and unwieldy in action. Beside me lay Farrington and Pelathon, stretched supine upon a brilliantly polished floor. I studied their changed and curiously bestial appearances in silence, watching rather dully their gradual return to consciousness. Something was knocking



insistently in my mind; the dim, vague hangovers of that incredible transit from a dead universe began to clear from my mind—I was haunted by the belief that I had been here before in exactly the same circumstances. I hardly dared to look up—yet involuntarily I did so.

I saw frozen amazement on the faces of Pelathon and Farrington as they did, likewise. There it was—the supreme mathematician! Artisan of creation itself!

For the second time in our numbing voyage through eternal figures we were encountering him—that astounding phenomenon of dimensions, figures and angles who flung forth—as on our previous visit—its communications in the form of vibrations analyzed down to terms of wave length.

Utterly unable to move, too confused to understand what it all meant, we watched the parade of mathematical thoughts before us, a parade which hid the supreme mathematician temporarily from view.

"You three, crude manifestations of figures, comprise the figures of a universe yet to be created. The sum total of a universe formed me, and yet I shall form it, because there is no time."

Of all the enigmatic observations we had come across, this, undoubtedly, was without parallel. I raised myself up to make an answer, to grapple with it, but the voice of Farrington forestalled me.

"You are the supreme mathematician. We have met before. You endeavored to form us into canceling figures, but Si-Lafnor, a scientist, saved us from destruction. Now, by some incredible twist of time, we're back again with you. How do you explain it?"

"I repeat—time is nonexistent," the symbols responded. "Out of the intellect of the universe from which you have come I was formed, and yet I existed before that universe because I created it. Hence, universes, myself,

and all known things, never begin and never die, because there is no time."

"You mean that out of all that vortex of intelligence, toward which we were drifting, you were born?" Farrington demanded amazedly.

"What else? And, since you did not belong to that exact universe you were formed not unnaturally as remainders of figures from the total. Had it been otherwise you would have been absorbed by me into my form. Ultimately, following immutable law, you are bound to readjust yourselves to your normal position in the vast scheme of things.

"You say you have been here before. In that observation you are including time. You have not been before; you are yet to come! The man, Si-Lafnor, who will come to your aid in the unthinkable distant totality of things, is not yet created—but he will be, because out of you I shall create him. Otherwise how could he have been born?"

My mind was completely unable to take in the infinite complexity of this paradox. I failed utterly to apprehend its meaning and so, I believe, did Farrington. Pelathon, though, was clearly deeply intrigued—and most certainly quite unafraid of the supreme mathematician. But then, I reflected, Pelathon had not seen the supreme one before; on the previous trip he had been left behind. This time things might be different.

"Am I permitted to ask the supreme mind questions?" he inquired at length.

"Proceed."

"FIRSTLY, since you have obviously disproved the concept of time, there is absolute proof that every known living thought, every vibration, is immovably interlocked. You came into being through the break-up of intellectual forces too vast for us to grasp. In turn, you thought of, and mathematically created, a colossal main universe, within



which there would be countless millions of other universes, the figurative atoms and electrons comprising its structure. Of two of those universes we three are part, my two friends of the Earthly universe, and myself of another.

"When those figures were complete they resolved themselves back again into their original formation; out of them, therefore, you were born, to repeat again the same process. And, throughout that process we have come and gone—and will continue to come and go until unguessable death wipes out all traces of cosmic creation.

"At an inconceivably remote period we came once before. Out of us—you begot the basis of figures which created one Si-Lafnor. He in turn created an Earthly universe, to which my two friends belong, and they in their turn created my universe. But basically their conceptions were only yours, because you are the fount of all knowledge. Am I correct?"

"Perfectly," the symbols responded. "To you it is a paradox, but as you will be forced to follow it through to the end, right up to the actual proving of a timeless state, you will comprehend better when your journey is ended."

"But," I said in bewilderment, "if we are to become the basis of the figures that will create Si-Lafnor, we shall have no material bodies! Then what's going to happen?"

"On your last journey—or on the journey you will make, whichever you prefer to call it—you died on a world called Mathematica. There you lost your Earthly bodies. You will resume them when the figures comprising these bodies have gone to make up Si-Lafnor. You perceive how everything dovetails into place?"

"But how is it possible to resume bodies that are dead?"

"Since there is no time they never died. You will see. Do not make the

supreme materialistic error of thinking of your bodies and your minds as the same identical set of figures. Each is independent. The figures forming a body are purely the carriers of the figures forming the mind. One can have a million matter bodies by the alteration in figures, but only one set of figures can comprise the mind.

"Conceive of it this way: Upon a piece of paper you execute an addition sum and supply its total. That, we will assume, comprises the total of your mind. Now, you execute the same addition sum on a hundred different sheets of paper. The figures which form the electrons and protons of the paper's make-up, are all different, but the figures making the total on the papers are all the same. That cannot be changed. Hence you can use as many sheets—or bodies—as you wish, but with only the same total each time.

"Only at the destruction of a universe do all the totals converge to one final grand total—and that was exactly what happened in the universe you just left—but since you three were not actual parts of that universe you formed into independent figures, to be resolved by me back into your rightful place, or, more clearly, adjusted into your correct position in the scale."

"And, presumably, every universe must have something as its basis of figures?" I asked quickly. "Not necessarily material bodies?"

"Not necessarily, no. Something—whatever the creative mind, working under my own computations, decides. And now, to complete the process of figures it is essential that you move onward in the creation of Si-Lafnor and his planet, Mathematica."

"One moment!" I interrupted hastily. "I believe I detect a flaw somewhere! Pelathon was not with us on our last visit. How do you account for his presence now?"

"The normal Pelathon is not with you even now—only a motley array of figures supporting his mind. The real Pelathon, on your last visit, unwittingly placed himself in a state of suspended animation on Mathematica, during which time his mind was here, but unresolved. Is that clear?"

"Well—er—not altogether," I answered vaguely. "Still, I'll ask no more questions; I have not the temerity. We await your final decision, supreme one."

"My final decision is made," the symbols responded, and with that the abode of the supreme mathematician snapped out like the turning of a switch and we were adrift again in the incomputable immensities of space.

#### IV.

THIS was the only occasion on which I sensed no transition through space. There was blackness certainly, but no real concept of it. My only recollection is that I opened my eyes and looked up directly into blazing ceiling lights, hurling forth a barrage of brilliance that reflected from a hall of machinery—machinery immediately familiar. I did not dare to move; very slowly I began adjusting my mind to normalcy. Gently I felt my limbs. Breeches? A rough gray shirt? I shot up with a jerk, astounded. I was in possession of the body that had formerly died! My own body! The body of Vernon Walsh, of New York, Earth. Then this must be the—

Mathematica! Planet of Si-Lafnor. Abode of the creator of the Earthly universe.

I scrambled to my feet, and beside me Pelathon and Farrington, both normal again, did likewise. Pelathon, despite the return of his normal body, seemed unworried by the change, but in the eyes of Farrington I read blank astonishment.

"Do you begin to realize—" I began dazedly—then I stopped and looked up as there began to approach us the familiar figure of Si-Lafnor himself, just like a more erudite edition of Pelathon, with his glittering metal cranium support affixed to his thin, wizened shoulders. Immediately his thought waves came to us.

"So you completed the cycle?" he asked in faint amusement. "I half expected that you would, but it was worth the experiment to prove time to be nonexistent. You appreciate, of course, that out of your former bodies I was born? And you realize that out of a certain machine—in which you imagine you traveled here—the Earthly universe will be born?"

"But it is born!" I yelled. "We've come from it! For Heaven's sake, Si-Lafnor, don't you start flinging paradoxes about!"

"I will endeavor not to," he assured me. "But you will realize, from what the supreme mathematician told you—and I read this from your minds—that thoughts are interlocked, which negates time? Hence, you bring to me a perfect conception of what your universe is like; I, in turn, build upon those thoughts and create your universe, and you yourselves are literally the basis of it. Your thoughts are, at least.

"Truly, it appears to you as though you have come from it, which in a sense is correct to your matter-bound bodies. But the real truth is that you have both come from it and are going to it because time, being nonexistent, is akin to an endless circle without beginning and without end. Understand?"

"I'll be damned if I do!" I almost snarled back. "It may be child's play to you to sort out these enigmas, but we're sick to death of the perpetual puzzles that surround us. Surely you remember us from the last time? Don't say that we never came at all! Remember?

When you made us indivisible so that we might escape the supreme mathematician's cancellations?"

"Certainly I remember," Si-Lafnor assented, still with that faint trace of amusement in his thoughts. "You arrived here having, as you believed, subtracted yourselves from the Earthly universe. You believed you could never return to it, because at that time you believed time to be a very actual concept.

"I perceived that out of your coming there was an excellent opportunity to juggle cosmic mathematics and prove for myself the problem of time. I always believed it did not really exist, but I had never been able to prove it because it would have entailed my own cancellation. Hence my making you three indivisible—or eternal—gave me my opportunity. I am afraid, my wandering friends, that I played upon you a very complicated form of joke."

"JOKE!" echoed Pelathon almost indignantly. "In what way?"

"Well, in the first place I realized by the very fact that you arrived here on *Mathematica* that time didn't really exist. That was proved even then by one very indisputable fact which even you, my friends, will understand. Remove one atom of energy, annihilate one atom completely and destroy its energy, and it would mean the end not only of your universe, but of every known universe—the complete and final extinction of all cosmic creation.

"And you came and tried to have me believe that you had left your universe forever behind you! That I knew was quite impossible, because had you done so creation itself would have passed away and you would never have come. I would not have been here; neither would the supreme mathematician have been in being. Therefore I realize you had never actually moved from your own universe!"

"Never moved from it!" Farrington yelled. "But that's ridiculous! Why, we crossed infinity—down, down——"

"Wait, my friend," Si-Lafnor intervened. "I realized that I could prove then quite clearly whether time existed or not, after I rescued you from the supreme mathematician. I promised to return you to a universe which would be an exact duplicate of your own; I promised, too, to pass you there by the foreshortening tenth dimension. I did pass you through the tenth dimension, but not to a duplicate of your universe—only to the next formation of figures existing beside those of your Earthly universe.

"Hence you arrived in a space in which you believed you had no part. Actually, mathematically, you were in your own universe, but hopelessly out of tune with its figures. Bluntly, you had been moved from the top of an addition column to the bottom. There you were on very strange ground, but, despite your position, the total remained unaffected.

"I realized that you would pass through the cycle of that other universe and come back to the starting point—if time were indeed a negligible factor. You proved that fact far beyond my expectations; you proved the beginning and the end because you saw how the interlocked thoughts of that universe brought into being the creator of all things—the supreme mathematician.

"He, in turn, created me out of your surplus bodies—again notice the action of interlocked thought; that is, the past and present thought being really one—and you resumed the bodies that had apparently died here. Hence you actually never moved at all. The only difference was that your minds shifted up and down the column. The figures comprising them were forced, by my efforts, to change places with other figures. You didn't affect the total; hence you were

bound to come back to where you began."

"But you said a little while ago, Si-Lafnor, that we have given you the idea to create our universe. How can that be if, according to you, we've come from it?"

"I spoke literally to make myself clear to you. When will you realize that you have come back to the beginning again? To the time when your universe was about to be created by me, sponsored by the underlying computations of the supreme mathematician himself. Nothing can come into being without a conception of it to start with. That is logic. You have completed a cycle and know the universe you have come from. At this stage I know nothing of it, save from your thoughts—and therefore I shall create it."

"Then you only know what happened on our last visit from our thoughts?" I asked quietly.

"Exactly."

"Then what happens now?" Pelathon inquired. "As I see it we are now, according to a timeless state, in the position we were on our last visit. Am I right?"

"Entirely. The next process is, of course, the building of the universe from which you have come, and of which your minds will form for me the figurative basis. How my figures will build up I do not know, but that they will build correctly to the final consummation is inevitable fact, otherwise you would not be here. Now, my friends, I am ready. If you are."

HE TURNED to his mathematical machines, those colossal monsters defying all Earthly comprehension. Here, at least, we had evidence that Si-Lafnor was not so intelligent as the supreme mathematician, for he needed material aid to put his figures into effect; the supreme mathematician, on the other

hand, accomplished it all by sheer force of mentality.

There began again a mere repetition of the miracles we had witnessed on our former visit to this incredible planet—the source of a timeless universe. Our universe! Small wonder the Earth-bound brains of Farrington and me were utterly confounded. Pelathon, though, still clung to some fragments of knowledge and stood silent, following the mathematician's every move, listening to every change in beat of the titanic figurative monsters as they began to trace invisibly the mounting accumulation of figures that would form the Earthly universe.

"It occurs to me," Si-Lafnor vibrated presently, turning from his tiny stool before his control board, "that on this occasion you would like to witness the material transformation begotten of my figuring. You shall do so. Watch."

He turned to one side and shifted a lever amidst the wilderness of controls. A screen came into life, six feet square and composed of a material that once again had us guessing.

"In your world," Si-Lafnor resumed, "you have, as I read from your minds, adding machines—tiny, insignificant offsprings of these vast monsters which I control here. These machines of yours produce, by type upon a sheet of paper, the visible proof of the figuring they have made up. Is that correct?"

"Perfectly," said I, thinking of the machine we had in the laboratory back home.

"Very well then. Just as those adding machines produce on paper the visible form of figures, so this screen reproduces the visible change of etheric figures. You understand that to create a universe out of figures one must have a basis to start from?"

"The supreme mathematician told us that."

"Exactly so. In this case the machine in which you came here will be

the basis of the figuring! What I shall do is not to add any energy to the complete whole which forms all universes. I shall merely shuffle it about so that your original machine which came from Earth shall form the basis of your own universe. At first you will behold this shuffling via the screen, but as the process goes on you are inevitably bound to be absorbed into it, since you are part of it. When that moment comes you will leave Mathematica, and return home. Now—behold.”

The screen came into life—at least we assumed it did. It changed from meaningless gray into dead and absolute black, a blackness that was not so much darkness as complete absence of all light. We stood looking at it expectantly. My mind, for some inconceivable reason, was thinking that an ordinary black Earthly dye would be pale gray beside this utter negation of all color.

“That is part of the empty space which will become your universe,” Si-Lafnor commented, his tentaculate hands flying up and down his arithmetical keyboard. “You have understood, of course, that not one universe but millions exist in the one perfectly circular conception of figures that welds together all creation. To create another universe it is simply a matter of exchanging the energy of one of these millions of universes without altering the sum total of the whole. What I do is to transform the figurative basis of radiant energy from one of these universes and alter it into wave lengths of less than  $1.3 \times 10^{-13}$  cms, which in turn, is transferred to that empty space where your universe is to be.”

“But an energy of that wave length doesn’t exist in the Earthly universe!” Farrington protested.

“Not to your knowledge, no—but in the beginning it does. Don’t you perceive that the running down of this energy, which to start with is of a higher

availability than any existing afterward, will create a universe? Possessing, as it does, a temperature of approximately 2,200,000,000,000 degrees it causes crystallization which forms into electrons and protons and, finally, atoms.

“Those things you understand; I see them only as changing figures, because upon analysis ether is the abstract background upon which I work, and electrons, protons and so forth all have a certain mathematical basis. But, naturalistically speaking, that is what does take place. You can see it for yourselves there.”

WE LOOKED back at the screen and beheld gradually the changing of that ultimate blackness into a dimly swirling chaos, resembling molten lead on the boil in the depths of a soot-black caldron. Gradually, but inevitably, galactic nebulae began to form—a swirling haze of light without understandable formation.

“Why do we see all this at once?” Farrington asked. “It is the work of millions of years for a universe to form.”

“Because there is no time, and because it already exists,” Si-Lafnor responded. “It is dead, alive, and dead again simultaneously, because the total of the figures is perpetually, eternally, the same—no matter what change there is. But the moment of your own inclusion is approaching. Be ready; you will have to form part of the perfect pattern. That you are here at all is proof of that. Be prepared.”

We tensed ourselves, hardly knowing what to expect, our eyes fixed to that screen. Then, with irritating slowness the vast mathematical room began to blur as though steam were obscuring the vision. Si-Lafnor became a solitary tiny speck in the midst of droning remotenesses; the beat and rumble of his vast machinery waxed and waned in our

ears as they hovered on the very edge of audible extinction.

The vision of a dividing, splitting galactic nebulae on the screen faded and vanished from sight. We were in a dense fog in which there reposed no light, no sound. And yet, through it all pulsed the steady conviction of change. Change! Change! We could feel the beat of it, and yet it did not affect us.

I uttered a strangled ejaculation, momentarily frightened, then I blinked in sheer astonishment as our surroundings gradually became clear again. I had been prepared for something unusual, but certainly for nothing so astonishing as that which I did behold.

About us reposed the familiar control room of the very space machine in which we had journeyed from our own universe—from Earth! Yes, everything was the same. There, mated to the control board, reposed the subtracting machines which Pelathon himself had fitted to the ordinary space-control mechanism—those bars, keys, rotary shafts, oil baths—all the paraphernalia.

Like a man rising from a trance I looked about me, at the closed air lock, at the rifles we had intended lifting from the wall when we had formerly reached *Mathematica*. Again the reiteration passed through my mind. Everything was the same.

"Good Lord!" muttered Farrington weakly, sinking down on the wall couch. "What in the name of chaos does this mean?"

"We're moving too!" I gasped out hoarsely, staring through the window. "Look! *Mathematica* is receding!"

In two flying leaps Farrington and Pelathon were with me. We stared down upon a brilliantly red world, a world about which there clung the carmine haze of outflowing intelligence and figure formation. Silent, astounded, we watched the delicate ripples of unfading color that oscillated and pervaded the

infinity through which we were now passing.

"I—I don't understand," I breathed at last, helplessly. "Our ship—our very own space ship—is now going backward. Traveling back to the source without our controlling it! Look at the machines; they're working on their own! In the name of sanity, Pelathon, can you explain it?"

He nodded composedly. "Certainly I can. Si-Lafnor told us that the very machine in which we came from our universe—or rather yours—would prove the very basis of the figures to create your universe. Naturally the ship is working on its own since Si-Lafnor is the motivator behind the figures. Slowly, surely, we are approaching, I feel sure, the answer to the eternal riddle through which we are now passing. But what that magnificent answer is we cannot yet tell. When the journey is ended we can perceive, perhaps, the underlying truth of all cosmic creation."

"What do you mean?" I demanded.

"Again, you remember what Si-Lafnor said? We never moved from our own respective universes? There, I believe, lies the answer. Later, we can be certain."

## V.

THERE BEGAN for us, thereafter, in reverse, a repetition of our journey down to *Mathematica*, but this time our vessel was forming the basis of the very universe from which we had originally come, a concept only possible to my mind when I realized the absence of time. Otherwise it would have been an irreconcilable paradox.

Gradually we passed from the regions of *Mathematica* into the blank space that evidently formed the first step in the building of new figures—figures which our very own machine was creating, backed by the remote control of Si-

Lafnor. Thus, we came finally to the first of the seven series of atomic solar systems, passed through the midst of these dead and barren worlds and watched them change from visible planets into complete electrons. Multiplication upon multiplication, the exact antithesis of the subtraction we had formerly encountered.

"It becomes quite clear what is happening," Pelathon commented, as the journey went on unhindered. "We found originally that the machine-made world of Vulcan was responsible for thought reflection in the Earthly universe. That machine-made world, we realized, was created by somebody then unknown to us. We entered it and found colossal machines within it. Between two copper pillars we found an indeterminate mist, and it was there that our journey of subtraction began.

"Now we know the truth. It is our machine that is creating those machines inside Vulcan even now, so, naturally, we are bound to pursue an exact course in reverse to our original one. You understand that at the moment, to our minds, the Earthly universe is not yet complete—where before it was quite complete and being left behind. We are now at the opposite end of the cycle—coming, not going. By the time we land back, the concept we call time will have advanced to the exact point where it was when we began. That is inevitable. Thus, as I see it, we prove time to be nonexistent. But that comes later."

Farrington and I agreed with silent nods. We were too puzzled to argue further. We could only watch the gradual reversion of our former trip, then, as we began to behold, far ahead, an apparent duplicate of the Milky Way we realized that our journey was nearly returning to the starting point. We endeavored to check the period of the journey by the chronometer, for Farrington and I slept several times in the

trip, but to our profound bafflement the chronometer needle was turning backward!

"The atomic Milky Way," murmured Pelathon, staring out on that incomprehensible swarm of living, burning matter. "In other words the atomic formation of the mist existing between the copper pillars. Even at this moment the machines of Vulcan, outcome of Si-Lafnor's original figuring, are building up by the progression and addition of this very machine. By the time we arrive there those machines will have formed and molded the universe—passed it on to the very second, the very instant, that we left it."

Again Farrington and I kept silent, watching the gradual condensation of that murky, intra-atomic swirling into a common haze that had no outlines—the formation of pure mist—the second ultimate stage of figuring. Thus we began on the third set of figuring which brought us, through many lingering hours as it seemed, to an area of ever-contracting space, yet in which we did not seem to move either one way or the other, but rather the ends of space came to us. I remembered, vaguely, how on our former trip this selfsame emptiness had seemed to expand without us shifting in the least.

In this wise the mist cleared and there began to loom upon us the immense machines that reposed inside the tenth planet, Vulcan. The titanic copper pillars, from which the mist had apparently been born, loomed vast and stupendous about our expanding machine. Then, these too passed into smallness as we lifted out of the mathematical mist and gazed down once more upon the mechanized wilderness couched within this figure-built world.

We were returning! That thought dinned constantly into my mind with vivid insistence. Or was it coming? Well, coming or going it was the same



to me, an Earthborn man. I was as eager as an exile as I stared through the window now, watching the ever-widening gap in the surface of Vulcan which we had originally made in order to enter the uncanny planet.

And, at last, we emerged! Our ship, just as it had done previously, came to a halt upon the twilight belt of Vulcan. We viewed again the landscape of solid, riveted metal, the glare of the homely, bisected sun, and the very-near horizon.

Quietly Farrington and I turned to look at Pelathon. He was smiling now.

"Well, we were right," he commented. "Our machine, by adding up constantly on its journey, produced the mist, the machines of Vulcan, and Vulcan itself—which in turn produced the universe by multiplication of figures born of figures. It is inevitable that we return to where we began. Ah! We're off again!"

He was correct. The same precise interval elapsed as on the previous trip, but this time we moved backward into space and left Vulcan far behind. It struck me as an odd significance that, on our return toward Earth, we passed in reverse the Earth-Mars space liner, at exactly the same split second as we had passed it on the outward journey. This incident more than anything else served to convince me that time was void, otherwise how could such a thing have happened?

The short journey from Vulcan to Earth seemed as nothing after the incredible things we had passed through. We came ultimately to beholding the friendly bulk of Earth far below, New York stirring to dim life as we approached, then becoming quiet and somber as we came even nearer. Again—reverse! When we had left New York, the populace had been rising for the day's work; now we were shooting back into the before-dawn hours. The complexity of it! I still did not understand, though from the dawning bright-

ness in the little eyes of Pelathon I was inclined to think that he had discovered a good deal.

SO WE CAME BACK, settling gently in the same space hangar as that from which we had started. Then, and only then, did the mathematical machines cease to work. Dazed, utterly puzzled, I led the way out of the ship into the great hangar itself. Pelathon and Farrington beside me, we moved through the quietness of the summer early morning toward my own home and there, after Farrington and I had had a meal, we dared to try and sum things up.

"Clearly," said Farrington, his eyes on the wall calendar, "no time has passed whatever! We started off on August 6, 1981—and yet the date is still the same! Since all calendars are automatic and controlled by the Sun, they can't lie. What do you make of it? According to that, we never made the trip!"

"From the instant we started the whole business to the approaching instant when we stopped, no time at all has elapsed," commented Pelathon, in profound thought. "We pursued a complete cycle of mathematics from the total, right through the figures of the universe, to the total again—bringing us back here to the period near the commencement. By the same token, Farrington, your thoughts created my universe, out of the metal which was brought to you from Vulcan."

Farrington nodded slowly. "Correct. What's to be done now?"

"To create my universe you must have the figurative basis to begin with. Quite obviously that figurative basis in this instance will be the very machine in which I came to visit you from my own world—which will pursue a similar course to the trip we've just made, back to my own universe again. You understand?"

"Certainly I do, but since then you transferred your machines to the space ship so we could make our trip to Mathematica."

"I know." Pelathon smiled oddly. "But perhaps I didn't really? Suppose we go to your laboratory and look."

"Just as you like, but I don't see the sense in it."

Pelathon said nothing and the three of us left my home, presently gaining the 'New York Institute of Scientific Research, where Pelathon had originally arrived from his own universe. To the profound amazement of Farrington and me, there reposed, in the same spot as at its arrival, the ebony box in which Pelathon had come, complete with its complicated enigma of controls, as perfect as the moment of arrival.

"What the——" I began, trying to shake off a curious dizziness that was upon me. "Farrington, that box——"

"I know," he said, passing a hand over his forehead. "I feel as though—as though there are gaps somewhere, as though we've walked out of somewhere into somewhere else. We——" He paused and uttered a throaty shout. "Good Lord, Vernon, look!" he exclaimed huskily.

I followed his gaze to the automatic calendar on the wall; my heart gave a very noticeable leap. Somewhere, somehow, we'd missed a gap of two weeks—the exact period that had elapsed between our meeting Pelathon and our departure from Earth! The date now was July 23rd! I recalled my dizziness and the infinite unreality of everything, as though hovering on the verge of a faint. Now my head was clear again.

"Do you still not understand?" Pelathon asked, looking back at us after he had climbed unconcernedly into his machine."

"No," said Farrington hoarsely. "Pelathon, what in——"

"This machine, which you thought of originally when you conceived my uni-

verse, is also the basis of my universe—just the same as yours was of the Earthly universe. Time is moving backward—backward to the point where your actual moment of contact with the cycle began. That moment has not yet come—— Now I return, to fit into the perfect total from where I sprang. Good-by, my friends."

We could think of nothing to say. We gaped as Pelathon's machine became hazy. He was a shadow amidst his controls, and then the laboratory was empty. Farrington turned and looked at me.

"Then—then he never really transferred his machinery to the space ship at all?" he demanded. "Say, Vernon, I think I'm going screwy; I do really."

"It seems——" I commenced, but that was as far as I got. A vast oppression was upon my mind, weighing me down intolerably. I think I staggered, only to recover myself in what seemed an instant later. My eyes immediately focused on that confounded wall calendar. It was still July 23rd, thank Heaven! I must be suffering from the effects of the journey, or else——

I CEASED TO THINK; I believe for a moment my heart stopped altogether, for I noticed that, though it was certainly July 23rd, it was in the year 1980! This time a year had mysteriously slid away—completely and absolutely ripped from all consciousness.

I looked at Farrington helplessly, but he motioned to me to remain silent. For the first time I noticed that others were mysteriously present now in the laboratory, in particular Dawson of the spaceways, the intrepid pilot who had brought the Vulcanian metal for us to analyze.

As if in a dream, I heard him repeat the very words he'd said on that former memorable day, when the metal had first come into our possession!

"You'd better have a care! Don't think up any tigers, or anything of that sort."

In response, the reflected thought produced for an instant a tiger amidst the laboratory fittings. Densely, my mouth lolling stupidly, I watched the reenactment of moments that I'd lived over before, Heaven knew when—but certainly on that same date of July 23, 1980!

Farrington looked at the metal again. "Most extraordinary—like a mirror reflecting the image of oneself," he said. "Can it perhaps be a race of beings in a universe, or in a world unknown? Strange beings of a far higher intellect than us? Guess I'm getting flavored with the fantastic stories of the day. Next thing I know I'll be thinking up some weird creature with bulging cranium and calling him an idiotic name like Pelathon, or something of that nature."

Dawson laughed good-humoredly and lounged from the laboratory. The instant the door had closed Farrington turned and looked at me, steadily and grimly.

"Vernon, at last I think I understand," he said slowly. "We have now come back to the beginning—to the moment when, by thought, I pictured Pelathon. A year afterward he came. But actually he didn't."

"No?" I said feebly.

"Of course not. A year hasn't passed—even to-morrow isn't here. We never physically made the journey, old man. We proved time to be timeless because, in between, whilst I uttered that very sentence to Dawson, we traveled unguessable distances, saw unguessable things, traced creation from beginning to end, and returned to carry on the thread exactly where we dropped it. We were apparently away all that time—yet no time elapsed because we did not move from here."

"Then what— You mean it was a dream?"

"Good heavens, no—it was real enough. My thoughts did reflect on this

metal and bring Pelathon to us; we did see all those things. But don't you understand even now that, there being no time, we did not appear to vanish at all—to Dawson and the others, that is. Our energies were transferred into eternal mathematics and, they being eternal, the total remained the same, but we shifted up and down the scale. All that we saw was true, and must have happened in, literally, *no* time. We have a small instance of that in the tiny span of a dream in which one can live years. But now we return to the normal Earthly course, the expenditure of energy, the normal process of time."

"But, a year hence, won't Pelathon reappear, though?" I demanded.

"No, because the year in between did not actually exist in normal progress of Earthly days. You remember how we reeled through the gap up to here? That was all part and parcel of the whole."

"Then indeed we have seen the beginning and end and I begin to realize some of the queer observations in Ecclesiasticus," I murmured. "You know, about that which has been is now — But what happens to the Vulcan metal now?"

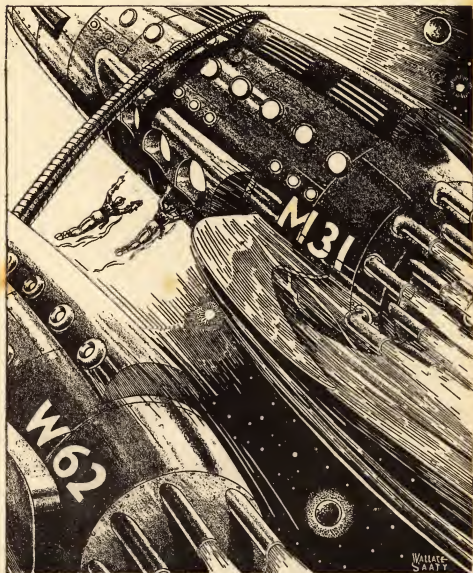
Farrington closed the lid of the box decisively. "As I remember it, on our mathematical journey, we labeled it 'Unclassified' and relegated it to the museum. That's exactly where it's going until, in the future, some power may unlock the underlying powers it possesses. It has shown us all creation, so, for our part at least, we have nothing more to learn."

"True," I said slowly, and from force of habit glanced at my watch. All that journey, all those æons, confluences of intellect, had taken exactly no time whatever. We had journeyed between Farrington's intake of breath to utter a word, and his exhalation at the finish of it. We had never moved from the spot. And yet—

Well, I still wonder—

# The W62's Last Flight

by Clifton B. Kruse



**W**ITHIN the observation dome which topped the mile-high tower, the engineers and astrophysicists hovered tensely about their instruments. The brilliant orange-red

sun of Mars glared with sinister fury, its shimmering reflections destroying the efficiency of telescopes and blue-flare signal beams as if in willful malice.

Across the high-ceilinged room the

rumbling voice of Dr. Hamison, in charge of North Cap Observatory, beat out a fresh detail of commands.

"Hart and Dirkins—connect spectroscope, Element H, to the light filter extension. Van Knerr, prepare the projection reflector—and continue to check the flash receiver. Blast such a sun! I've never seen it so glaring—not a thing can we see."

The tall, dark-haired engineer, standing beside the perturbed director of the great Martian observatory, watched the fevered activity from narrowed eyes. He turned quickly to Dr. Hamison, grasping the elderly astrophysicist's shoulder firmly.

"But are you sure that the M31 had deviated seriously from her course? At this hour, aren't all observations from North Cap rather uncertain?"

"Am I sure? Do I know my business?" Dr. Hamison quivered in impatience. "Listen once, Master Engineer Wiljon Kar. Twelve hours ago the M31, the biggest passenger transport of all the Interplanetary's ships, blasts from Athalon, Mars toward Venus. According to the rules, the observatory here must check the transport's flight so long as visibility is maintained. We do that! Then in two hours what happens? The M31 veers from her course—noses at such an arc that she's firing toward Mercury—who is at perihelion—and she will miss both Planets Two and Three.

"Our flash marker signals a warning. From the M31 we get a response that they're trying to straighten out. We see the flares from the M31's torps. Their pilot's evidently made a miscalculation and is now correcting the course.

"Still we watch—three hours—four hours—and the M31 still fails to follow her arc toward Venus. Our flash marker signals again—but with midday approaching, the blue-flare beams can scarcely be seen from our observatory here—and the sun's bright—unusually

bright it seems. The M31 blasts steadily—sharply now toward Mercury—now off at such an angle that we cannot determine her purpose. Listen, Wiljon Kar—the M31 is now over forty million miles off her course—and she's headed straight into the sun!"

The silence which followed the doctor's pronouncement was electric. Unconsciously men straightened themselves, a quivering of mystery and awe tingling nerve centers.

"Report, sir. The projection screen is focused." Dirkins' voice rang loudly. Immediately there assembled about the instrument an unusually hushed and perplexed group of scientists.

The Element H spectroscopic adjustment had filtered the telescopic image into a deep-gray picture. Now, before their eyes, the M31, silver, whale-shaped passenger liner of the spaceways, was seen as she hurled herself madly across the black void of space. Sharp lines of yellow-green light represented the intense fury of her torp blasts. But the firing was erratic and the direction unexplainably inconstant.

Wiljon Kar had elbowed his way to the front of the troubled group. He leaned forward now, studying each minute fluctuation of the M31's torp blasts. His eyes were hard. His huge fist balled into war-club hardness. Wiljon Kar, master engineer, knew the ways of space ships as did no other man alive. As commander of the special engineering transport, W62, he had faced and solved the most bizarre problems in the face of death and lived to conquer for the glory of the council.

"I do not understand!" Dr. Hamison tugged nervously at his white hair. "There is something decidedly unusual about it."

Abruptly Master Engineer Wiljon Kar whipped around. Black eyes blazed with irrepressible enthusiasm.

"Quick, Hamison, flash a special call to Toronto, Planet Earth. Inform the

council that M31 is falling into the sun—cause unknown. And tell them that the W62 is making preparations to take off immediately."

IT WAS characteristic of Wiljon Kar, once moved by a mysterious project, to command, notwithstanding rank or position. And equally true to form was the instinctive obedience which all men, scientist, soldier or lowly blaster, rendered to him. Dr. Hamison hastened to the flash marker's station. Blue signal beams shot toward Earth even as Wiljon Kar dropped groundward in the tower's lift.

"W62 is blasting spaceward," Dr. Hamison signaled feverishly. "Angling two degrees sunward of Planet Mercury. Observations of M31 still show erratic course of her arc. Awaiting further orders and developments. Signed, D. K. Hamison, director, North Cap Observatory, Planet Mars."

FURIOUSLY, the W62 stabbed into the blackness of space. Her power lever held to first-limit acceleration, the trim ship's fire-belching torps streaked the sky with living scars of white-hot flame. The shriek of her gravity beams cut deafeningly, and the stench of boiling oil tingled even the toughened throats of her space-hardened crew. Bending low and tensely over the controls, Wiljon Kar seemed to draw some super-mechanical excellence from the roaring machine. To his right, tight-lipped and amazingly calm, the elderly Prock concentrated upon the hemispherical arc computer.

"M31 is at a twenty-degree angle to our course now." Prock clipped his words. "But—look once, Wiljon Kar—we can never head her off before she falls into the sun. Great Polaris, man—we shall be too near the sun ourselves!"

"Coördinate the angle three degrees sunward of Mercury," Wiljon Kar in-

terrupted. "And have Hals recheck the compensator tubes."

The W62 fired headlong with reckless fury. Only an especially equipped transport such as this could attain and hold such a velocity. The incessantly twanging dirge of her speed-tortured drivers beat aching into dulled eardrums.

Wiljon Kar had leaned back from the controls only long enough to remove his tunic. Sweat streamed down his muscular body. Still he held the nerve-destroying pace. Above him the plotograph showed the steady drive of the ship along an almost straight line from Mars to a point dangerously midway between the bleak, iron world of Mercury and the flaming inferno of the sun itself.

Once Prock had approached the telescopic reflector plate, lifting the cover shield a scant inch. As if the thing were afire, searing blue-white light stabbed across the room. Quickly Prock shut down the cover. His gnarled old hands pressed to momentarily blinded eyes. So close to the sun were they that the indescribable brightness seemed to burn across fully half the sky.

The barest trace of a grin showed itself upon Wiljon Kar's tautly drawn lips. The intensely unbearable reflection from the telescopic plate flashed terrifying danger; nevertheless there was not the slightest tremor in the young master engineer's steel nerves.

Above the whine of the gravity beams Prock called out: "How much longer?"

Wiljon Kar shook his head. The W62 continued its mad plunge. Now Prock, too, removed his tunic. Sweltering waves of heat radiated from the walls of the plot deck. Both men were breathing in quickened gasps.

"Recheck the angle," Wiljon Kar commanded.

Mopping the sweat from his long, leathery face Prock turned wearily to the arc computer.



"Sacred nebulae! And it is to hell itself that we journey. I say, Wiljon Kar, I'm frying in me own fat."

Heaving weakly against the port, Lieutenant Mardico, guardsman of the Flying Engineers, panted wheezily and wrung the damp tufts of his wiry gray beard. His red tunic was bared so that the hairy chest glistened with beaded perspiration.

"Control yourself, Mardico." Prock called over his shoulder. "You'll get your needed wetness back inside of you soon enough."

"But it's steaming that I be," old Mardico bewailed. "And I tell you, Prock, she can't stand it—she's got the flaring fever. It's killing her—— She's notable——"

"Who? What?"

"Bosco! Look at her. But cast your eyes upon the dying remnants of her beauty. Ah, bitter indeed is life in the spaceways. Poor Bosco. Poor, poor little Bosco."

THE tenseness seemed to snap and break in Prock. He leaned upon the arc computer, a strange mirth quivering through his miserably hot body. He could not help it. Old Mardico stood there swaying in the doorway. In the old guardsman's extended hands there huddled a tiny purplish ball of prickles. Bosco, the tiny Neptunian flack which Mardico had lately acquired, squirmed restlessly as the old man fretted and fussed in mothering solace.

"Never so near the sun should she be, I tell you," old Mardico blubbered as he shifted his quid of weechie from one cheek to the other. "Little Bosco, I fear the end."

"Align our position with M31."

Wiljon Kar's command cut sharply across the plot deck. Mardico stiffened to militaristic attention. Prock flew to his instruments.

"Ready—she's swerving sharply—still fighting against the pull. Wait—

wait—wait, Wiljon Kar—here's the data. We can meet M31 at three point nine sunward of Mercury—in less than an hour."

Hard lines of determination held rigidly in the strong face of Master Engineer Wiljon Kar. He studied the plottograph, fingers clutching control levers fiercely. As if awaiting some signaled command he braced himself in the seat, stabbed the firing studs. W62 quivered, her shell grating with the strain. In a staggering arc Wiljon Kar sent the plunging craft seemingly directly into the Sun. Prock gasped, clutched wildly to maintain equilibrium.

With a sluffing *clump!* the pulposus body of old Mardico careened across the plot deck to smash against a side wall.

"Co-co-colossus!" Mardico sucked noisily to regain his breath only to scream it out again in lusty complaint. "'Tis the engineers themselves as be swimming in roulek. Wiljon Kar, you're drunk. You nearly killed her. Look at Bosco's spines—they're getting black. Prock! Wiljon Kar! Hear me! You're killing Bosco. You're——"

Wiljon Kar's voice roared out above the inferno of heat and noise: "Call Twombly. Have him try the blue flares again. Keep signaling the M31 to continue nose blasts against the force."

The narrow plot deck became hazy as the heat waves cast forth their weird distortion. Staggering to his feet, his long, bony fingers rumpling the thinning strands of his white hair, Prock slumped toward the ship's controls. There was a fierce grin etched upon Wiljon Kar's colorless lips as he prepared to turn the piloting over to the elderly master engineer.

"Hold it—until we are within anchoring distance of M31—and keep in touch with Twombly. The combined power of both transports may break that clutch—whatever it may be."

Quickly now, Wiljon Kar was across



the plot deck. He was clawing at the awkward bulk of a space suit in nervous haste. Yet even as he hastened to don the suit old Mardico was beside him. Wiping the streams of sweat from his bristly face, Mardico, too, scrambled into a space suit. Wiljon Kar shook his head. But Mardico seemed not to trouble himself with such an attitude. The wiry strands of his gray beard stood out in determination. His steel-gray eyes narrowed sharply and the protruding jaw worked vigorously upon the mouthful of weechie. For a brief moment the old man's gaze held to the stern look in the commander's eyes. Defiantly old Mardico spattered the far wall of the plot deck with a yellow blob of weechie. He locked the headpiece in place.

Wiljon Kar merely shrugged his shoulders. He should have known better than to have permitted the old spaceman's coming on this trip in such a condition, even though refusal would have broken the old fighter's stout heart. Behind the visor of his space cap old Mardico was grinning triumphantly. His left hand rested tenderly above the bulge in his suit. Bosco was snuggled safely against the hairy chest.

"To the observation port," the master engineer commanded. "Man the anchor chains as soon as Prock fires them at the M31. We're going out."

LIEUTENANT MARDICO waved a broad salute, straightened his shoulders proudly and spun about to clamber along the ramp. Yet scarcely had he shuffled beyond the first turn when a terrific force caught him as if he were but a leaf in a whirlwind. Mardico's body caromed viciously from point to point as he was hurled along the ramp a full quarter turn of the ship.

His lungs were pressed free of air. Sharp, blinding pains lightnined through his head. For seemingly interminable minutes the old guardsman lay

in a heap, sucking painfully for air. His head swirled madly and the blood strained his arteries in frantic readjustment. Now he realized that he was creeping forward upon hands and knees.

Where was he? What had happened? Tears blurred his eyes and lashing pains cut sharply through his head. He was conscious of a weird, unnatural vibration of the W62. To his space-trained senses the unbelievable velocity of the transport became fearfully manifest. The W62 was driving forward at a speed which even her great torps could not produce. Never before had his ears tingled with such a sensation of speed.

But the motors were silent! Old Mardico staggered to his feet. Once he attempted to call out, yet his lungs were too sore to force any great volume of sound through his throat. Had it not been for the rugged protection of the space suit, he realized, he would never have survived such a blow. Even so, his body must be a mass of bruises.

A soft murmuring aroused old Mardico from his bleary-headed perplexity. Now the murmuring was accompanied by a restless stirring against his chest. A shudder of fearful relief coursed over the old man's body. It was Bosco. The little flack was alive. Feebly the strange creature voiced its concern. Through the thick padding of his space suit old Mardico cuddled the little animal.

"Mardico—can you hear me—answer— Mardico, where are you?"

The old guardsman stiffened, the wiry strands of his gray beard seeming to stand out rigidly. That was Wiljon Kar's voice—a soft, plaintive whisper.

"Mardico! Mardico!" The tense whispering cut sharply into old Mardico's punch-drunk brain.

"Wiljon Kar—'tis your ghost I hear. You're not here and yet to my ears comes the stuff of your very speech."

"Ghost be damned!" The whispering changed to a deep-throated rumble. "Get down here—at the port of the first

storage deck. Quick—I'm pinned down—ship's gone wild. Something's happened—I can't move."

With fierce, joyous energy old Mardico spun about. As rapidly as his lumbering strides would bear him he made his way to the farthest point of the ramp.

"Glory and 'tis a spaceman's luck, Wiljon Kar, that we have both lived to be batted about like balls in a game. Wait—'tis this port that's sprung upon his hinges! Now steady—I'm lifting her. Can you make it?"

As Mardico heaved upon the massive port Wiljon Kar dragged his body along the ramp. His face was drained of all color and once a groan escaped his tightly compressed lips.

"Wiljon Kar—you're hurt!"

Mardico was upon his knees. Clumsily he lifted the engineer's weakened body. But for a moment only did Wiljon Kar relax in the old guardsman's arms. He seemed to shudder with some terrifying energy, half struggled to his feet only to slump back down upon old Mardico.

"Quick—help me—to the plot deck. It's got us—can't you tell it? That same pull which is dragging M31— Our space suits saved us—but Prock—and the others—"

Mardico was on his feet. His old eyes narrowed to hard slits. Taking a quick, deep breath he bent down, grasped the helpless body of the engineer and hoisted him to his shoulder. Mardico's heavy, ponderous steps beat speedily along the ramp.

The shrill scream of the transport prodded taut nerves. Not once since the mad acceleration had hurled them along the ramp had the terrifying velocity ceased. A strange, fatal calm had gripped Mardico. Speedily, yet tenderly, he placed Wiljon Kar in the seat before the W62's controls. Immediately the old guardsman was across the plot deck.

THERE WAS a choking pain in his throat as he saw the huddled, inert form lying on the floor. Prock, his long be-wrinkled face as white as his hair, lay motionless. Old Mardico's hands shook as he felt over the elderly engineer's body. He couldn't see Prock now for the hot tears beclouding his eyes.

"Prock! Prock!" The words tumbled foolishly from his quivering lips.

Twisting his space cap from the suit, old Mardico laid his ear upon Prock's chest. Suddenly he straightened up. Eyes gleamed brightly now. Joy so sharp it seemed more pain than hope burned through his nerves as he began feverishly to apply spaceman's first aid. Prock was yet alive.

"Wiljon Kar"—Prock's lips twisted sharply with the effort to speak—"we're falling—into the sun—can't last much longer."

Still holding the elderly engineer's head in his arms Mardico called loudly over his shoulder.

"Prock's saying something, sir—something about falling into the sun."

Clutching the pilot seat Wiljon Kar was straining himself painfully in an effort to appraise the flight indications upon the plottograph. The expression upon the engineer's face stirred the bewildered old guardsman. He glanced back down at Prock's livid face.

Mardico's jaw shot forward belligerently. Laying the half-alive body upon the floor as gently as he could, he opened his own space suit. A tremble of tenderness caused his hands to shake as he placed the purplish ball of Bosco beside Prock.

"Orders, sir." Mardico stood beside Wiljon Kar, gripped the engineer's shoulder firmly.

Wiljon Kar's eyes gleamed blue-black with the keenness of his emotion.

"Mardico—listen—we can do it! We've got to—and hurry. I can't walk—legs are bungled—got to depend on you to get me to the observation port."

The shrill vibration of the hurtling transport sang with monsoon fierceness as Mardico deposited Wiljon Kar within the transparent dome atop the long, slim hull. The vivid glare of the mountainous sun burned through their space suits till even the light shields upon the space caps were nearly useless. The groan which escaped Wiljon Kar's clenched teeth was not from pain. For the first time he knew the full impact of a sudden, terrible fear. The nose of the W62 was driving with incredible madness toward the very center of the blindingly white sun. In contrast, what little of space was visible was a veritable solid of black. That darker splotch to their left might be Mercury.

Only the fact of its nearness made the silver M31 apparent at all. Through the barest crack between his fingers Wiljon Kar studied the other ship.

"We can do it." His words came in gasps. "It's our only chance—if I've figured rightly. But quick, Mardico, get back to the plot deck. Fire the release guns upon the anchor chains. I'll guide them from here. Then speedily—round up the crew—all that be yet alive—send them here—within a quarter of an hour—and every man in a space suit!"

Mardico was off, his thick body sailing along the ramps in haste. A cold, fatalistic calm settled over the master engineer. For the moment he forgot the pain of a crippled body, nor heard the sibilant screams of the speeding transport.

"Ready, sir." It was Mechanic Hals whose voice broke into Wiljon Kar's frantic calculations. Behind the big mechanic stood the tall, lean Twombley.

At that moment a signal gong from the plot deck aroused Wiljon Kar to action. Hands steadied upon anchor guides. A rumbling quivered over the dome as a snakelike coil of steel shot from the W62. Eyes straining through bare slits, Wiljon Kar guided the blasts,

saw that the anchor caps fastened upon the silver plates of M31.

"Boarding her?" Hals shouted.

Upon the engineer's commanding nod both mechanics squeezed through the port, grasped the anchor chain. The sput of a flame gun sent dangling bodies across the intervening void.

Mardico staggered into the dome bearing the inert, though completely suited body of Prock.

"Glory to Pluto!" Mardico sputtered. "And do we scorn the devil to his horny face by ship jumping whilst the very fires of the sun singe our hides! I say——"

"Hush—or you'll burn while your tongue's still flapping. You can swing it with Prock."

"And leave you here? 'Tis not the way I see it, Wiljon Kar."

Though he did not reply in words and the glare of the sun hid the expression in his face, Mardico sensed the dynamic anger of his commander. Swiftly the old guardsman made for the port. Shifting Prock's body so that the trip might be executed with a minimum of danger, Mardico grasped one hand to the chain, firing his flame gun from the hand which held the inert body.

WILJON KAR had permitted himself a parting glance toward the floating bodies. Lifting a hand in mute tribute to their loyalty he turned grimly to the almost superhuman task before him. A mirthless smile was etched upon the strong features as he lowered himself from the dome to the ship's ramp. Dragging his useless legs painfully, Wiljon Kar crawled frantically to the plot deck.

The W62 seemed ghostly, a weirdly lifeless craft. For a moment he was acutely conscious of being alone. Memories came of old Mardico's jovial rumbles, of the blind loyalty of Twombley and Hals, of the self-effacing greatness of the elderly Prock. Noble men were

they, knowing nothing of fear, laughing in the face of impossibilities, secure in their faith that he, Wiljon Kar, would somehow determine upon the right orders that the W62 might again triumph against the incalculable strength and vastness of the universe.

And he must figure rightly once more. Fervently he invoked strength and wisdom. He had to be right—this last time. Crawling painfully up into the pilot seat Wiljon Kar grasped at the ship's controls.

A faint murmur of power throbbed hopefully at his touch. With expert precision he shunted the remaining energy of the transport toward the ring of secondary torps, used principally in steering. His hand resting tremblingly upon the power lever, Wiljon Kar made a slow, cautious recheck of the gauges, braced himself, breathing deeply. It would be a difficult maneuver and one too reckless for ordinary cruising. Ships had been known to explode when subjected to even less strain.

Wiljon Kar's hands played upon the controls. From a single torp a stab of energy drove the W62 headlong in the direction of the mysterious pull. He was conscious of strange tremors throughout his body. Flight gauges were suddenly useless. He was flying forward at a velocity never before endured by man. Nerves tingled in a surge of wild joy. The grin deepened. Death it must be—but death most gloriously won.

Counting the minutes, Wiljon Kar estimated that the W62 must be well forward of the M31 and gaining with fearful acceleration. Suddenly his eyes sharpened to pin-point keenness. He seemed to stare at the steady move of his own hand as he reached forward, breathed deeply again, pressed the studs of the secondary torps.

The crescendo of screeching, howling sounds rose swiftly until human ears refused to respond. Sweat beaded upon

the marble-white forehead. His head throbbed with a soundless agony. Every nerve stiffened, trilled in fiery torture. Speed—incredible motion! Wiljon Kar marveled at the endurance of his own body. A lesser man would have ceased to know life before this. But somehow he held on, no longer conscious of pain nor capable of conceiving fear. This was death—death prolonged in exquisite agony—death whose glory was only dreamable.

On and on, faster and faster. The W62 was miles ahead of the M31 now. The broken gauges mocked his anxious survey. Nevertheless, he was safe enough in counting again. Every minute stretched the gap between the two ships. Wiljon Kar lay back in the seat, closed his eyes, waited for death.

A STRANGE, hoarse muttering stabbed the calmness of his unreal relaxation. Wiljon Kar leaned forward, laughed softly. He'd been dreaming, of course. His tortured mind must be confusing memory with present-sense receptivity. But the rumbling tone had sounded as if old Mardico were beside him. He forced himself to lay back. He couldn't give up now. There was still one more task to perform. He must live long enough to fulfill this mission.

"Wiljon Kar—'tis to hell we've come. Wiljon Kar—what's happened?"

The engineer spun about, a cry of incredulity escaping the firmly drawn lips.

"Mardico! You—you here?"

Staggering slowly, his thick body seeming scarcely able to maneuver against the awful velocity, the old guardsman groped his way across the plot deck.

"Wiljon Kar," old Mardico said. "Glory to Pluto! Never have I seen such craziness—nor be I drunk. So sober am I that scarcely do I recognize the likes of me. I say what's up?"

Wiljon Kar choked out the words: "Why are you here? I ordered——"

Mardico waved him to silence. "I took him—over. Prock's on the M31—with Hals and Twombley. I had to come back—to get Bosco."

A queer pain twisted in his throat. Wiljon Kar met the steady gaze from the old guardsman's steel-gray eyes. His lips moved to shape the word he could not utter: "Liar." Mardico had not deceived him. Impulsively the two gripped hands.

"I figured as how—as how you might be needing me—somehow or other," the whispered words scarcely carried above the shrieking din.

Wiljon Kar spun about in the seat quickly, lest the tears in his eyes be seen. For a moment his hands quivered above the controls. A new light gleamed from his eyes now. Mardico's insane loyalty seemed to have charged the engineer with renewed energy.

"The pull's holding evenly now." Wiljon Kar spoke that the sound of his own voice might hold his mind in proper balance. "Velocity is constant. We can chance it for another quarter hour—if the break doesn't come before that. We'll have to——" His voice droned into tight-lipped silence as the calculations were rechecked. Suddenly he turned sharply.

"Ready, Mardico—throw on your space cap and close the light filter. Then heave the reflector plate cover. Hold it open till I order it shut again. All set? Open up!"

Vivid lashes of merciless white light poured from the reflector until every line of the plot deck was lost in the furious glare. Using a triple shield, Wiljon Kar studied the image whose fiery intensity would not be constrained to the limits of the reflector plate. They were staring at the sun toward which the W62 was plunging.

Wiljon Kar gasped in sheer amaze-

ment. "I see it! I see it now," he cried. "We've nosed into it!"

Against the pulsating background of the sun the mysterious ball of almost invisible energy rotated as a planet spins in its orbital journey. The engineer's hands shook as he adjusted the reflector plate so that the point of examination was gradually shifted completely around the W62.

"We're in the very center of it. If Prock were only here—— But it is matter. We're at the very core of a whirling globe of matter."

Skillfully, the thrill of discovery burning through his blood stream, Wiljon Kar adjusted the Element H spectro-scope.

"A world it is," old Mardico breathed awedly against the engineer's ear. "Look at the bands—carbon a little, nitrogen, helium—colossus—'tis mostly all helium—and we're inside of it."

"Right," Wiljon Kar's voice rose in excitement. "This is—or was once—a small satellite—perhaps of Planet Mercury. But with its orbit so near the sun its elements have broken down into a pure gaseous state—and its resultant excess of energy charges account for this incredible power to clutch an all-metal space ship.

"It's more vast than I'd imagined—small wonder the M31 was pulled away. The transport must have come into the sphere of influence by chance, as the strange satellite tore along its eccentric orbit. Now I remember—— Conningsby once advanced a theory that there was a satellite of Mercury which could not be observed due to the intense brightness of the sun. And we've found it! We've found Conningsby's satellite!"

Mardico's wheezing gasps cut sharply. Almost feebly the old guardsman clutched at the excited engineer's arm.

"But so, Wiljon Kar—now that we've found it what—what t'hell are we gonna do with it? We're falling——"

Wiljon Kar leaned back, his lanky frame shaking with hysterical laughter.

"That's it—we're not falling. Don't you see it, Mardico? We're riding with the satellite—inside of it. We're a part of it. We can't fall into the sun because the satellite itself will carry us beyond as it hurls along its crazed orbit. We'll just stay here and——"

"And get turned into a gas? No, by glory, 'tis not the way of it! Wiljon Kar—wait—let me shut off the danged reflector. The heat's got you."

WITHOUT WAITING the engineer's orders Mardico clamped the cover back upon the reflector plate. His huge body bustled with feverish haste. He hastened to the compartment at the rear of the room, securing two stone tankards.

"Drink," Mardico ordered. "Get your brain in proper order. Drink, I say."

Wiljon Kar lowered the tankard with a groan. The bitter roulek burned his mouth. Nevertheless, the lines of his face hardened into ridges of determination.

"The other ship—the M31," he muttered. "Our chance to save it—Mardico, listen—to the power deck. Align the fuel flow, cut off feeder tubes to all save rear- and lunar-deck torps—quick."

Old Mardico grinned and brushed the roulek-moistened bristles about his mouth. Sweat poured down his face. His breath was coming in short, painful gasps. But he responded with a reckless salute.

The churning surge of tortured matter reverberated with barragelike thunder, hammered nerves into wire-stiff tautness. Wiljon Kar set the controls. Minutes dragged with agony. At sound of the gong he tensed, grasped power-and-direction levers, threw the instruments into full power.

The W62 seemed to spin till vision was lost in the cruel twist of kaleido-

scopic horror. Only the sense of pain remained. Jets of furious flame burst from the W62's torps, twisting the ship into a new angle. For a moment they seemed suspended in space. Time, energy, matter were meaningless fragments of fiction to harried brains. Mechanically, Wiljon Kar threw all his remaining strength upon the main-torp lever.

With a wrench which seemed to pull the very life from his body he felt the W62 tear itself free of the clutching force. The torps blasts held, yet the W62 seemed to pull away but scant inches.

He was conscious of Mardico's return to the plot deck. Still holding the main discharge lever at full power, Wiljon Kar screamed frantic orders.

"Mardico—the arc-finder director—release to complete discharge—hurry."

Clumsily, his body swaying drunkenly from the combined heat and strain of the ship, Mardico swayed toward the instrument.

"Space suit in order!" Wiljon Kar cried out fiercely. "Now—ready—cut it loose!"

In the terrific blast which followed, the W62 seemed the very stuff of a holocaust. Senses were tortured to indescribable endurance of blinding light and roll upon roll of sound. Flashing spears of exquisite pain stabbed through every nerve. For moments, or hours, or years it seemed, agonized consciousness shot with the speed of light across the immeasurable chaos of an exploding universe.

"Mardico!" Wiljon Kar sensed his awkward stumble toward the old guardsman. Before his horrified gaze the walls of the plot deck cracked, crumbled, expanded. Waves of exploding energy hurled outward to be lost in the stately roll of alternating light and frigid blackness.

Wiljon Kar was conscious now of his hold upon Mardico's body. Felt the

impact of the other's gaze of horror as their eyes met. Old Mardico was reaching toward him, his lips moving in spasmodic jerks as he sought to voice a sound.

THEY WERE hurtling through space. Blackness engulfed them. Now the alternating bands of light and darkness became recognizable. They were spinning even as their bodies shot forward. The light was the glare of the distant sun as they spun in the flight; the darkness was the blackness of space. But they were no longer in the W62. Wiljon Kar struggled to align his thoughts. Why were they here? What had happened?

Now he saw it. The W62 had exploded with that last and greatest strain. They had been blasted from the ripping shell of matter and driving energy.

Old Mardico's voice sounded through the flurry of their speeding journey.

"Wiljon Kar—are you alive? Look—off that way—earthward—when we're

turned about again—— Do you see it? The M31—and she's maneuvering! She's free! Do you see it?"

Wiljon Kar's lips tightened in a mirthless grin. Mardico was right. He could catch a glimpse of it as they spun about. The M31 was angling now. It would be a matter of an hour or so until the anchor chains would shoot out. The thought was pleasant. They'd be back on Mars. It would be nightfall at North Cap. Wiljon Kar laughed softly.

"I say," Mardico said, "laughing again? But no matter. 'Tis the roulek as tickles your heart this time and not sun madness."

"No—I was just thinking—about what you came back for. You forgot all about Bosco."

Mardico snorted into the radio phone.

"Glory and you're misjudging me, sir, for Bosco, bless her prickly hide, is safe with Prock on the M31 all the time. But watch it—she's nearin'—there comes the anchor chain. Holy comets! Whata day—whata day."

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by  
Eando Binder

## IX.

DORA awoke with a start. She sensed that something had awakened her. Not the stroke of the clock, nor any interior noise. It had been something else. Staring around, everything seemed normal. Her husband lay peacefully asleep in the other bunk. But something had—

She shrugged and stepped to the window, graceful as a fairy, in Iapetus' puny gravity. Low on the horizon Saturn and his shimmering halo were slowly ascending, for this satellite had a period of rotation. Dora drank in the beauty of the scene. Long, silvered shafts of xanthic light crawled over the barren topography outside the ship. Even that desolate landscape was beautiful under the magic touch of an alien pseudosun.

Near by, towering a hundred feet, were the beetling cliffs under which Renolf had parked the *Comet*, as a measure of protection against meteors. Yet Dora saw that the repulsor screen's recorder showed a terrific discharge. A huge meteor had plunged at the ship. The valiant, atomic-powered screen had shunted it aside.

Suddenly the girl gasped, as her eyes

turned to the other side of the cabin. From out that port she saw a confused mass of crystalline matter blocking the light. Frightened, she awoke Renolf. The latter blinked his eyes and then ran to the forward compartment. When he returned, he was grinning.

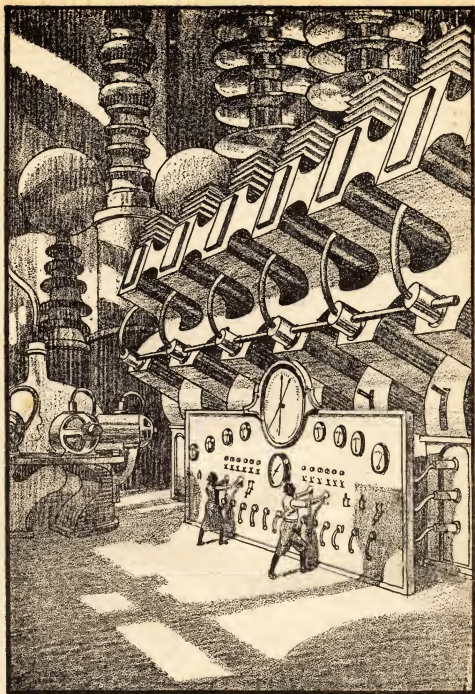
"Nothing serious, honey. Just a mere matter of maybe a thousand tons of rock falling on the ship! Saw the jagged missing patch in the cliff's face from the front nose port. Look at that gauge, will you? Ten thousand milliergs of repulsion! Why that must have burned up a full ounce of sand fuel! Enough to feed the engines from here to Halifax. Such expense!"

Dora slapped him playfully. "Silly! But really, Vince, for a minute, when I saw that mess out there by the window, I didn't know what to think."

"A mere dust heap to our repulsion screen," deprecated Vincent. "It's designed to turn away instantaneously a meteor outweighing the *Comet* a thousand times at one tenth the speed of light."

"What made the cliff fall anyway?"

"A meteor, of course." Vincent turned to look again at the jumbled debris beyond the side port. For a



*Sixty seconds to go! Thereafter the two humans reacted as if the shiftings of needles were their own pulse beats.*

long moment he stared—and wondered. For what he had neglected to tell Dora was that a meteor, in plunging into the hard, crystalline mass of the cliff, would have sprayed it in a molten form far and wide.

Something else had caused that collapse of rigid rock. Either a fault in its grain, or—the menace! An odd thought. An impossible thought. Yet the staring man could not rid himself of it. There had grown up in him, in these past few weeks, a feeling that they were being watched. That the course of the *Comet* had been followed by other-worldly eyes. At times Renolf, with the headband on, had seemed to feel a prying finger in his mind. As though the menace, whatever and wherever it was, were tabulating, recording, his innermost thoughts. It had been an eerie feeling.

And now this sudden collapse of a cliff that had stood for ages— Was it a warning?

FOR AN HOUR they were busy and happy with the bustling of daily ablutions and a breakfast. Vincent's absences as the super-Renolf were really a tonic to their companionship. It made them more appreciative of each other. Finally the young husband reached for the headband with a sigh. He was sorry to part company with his wife, yet the urge of the super-Renolf was not to be denied.

"We've checked off the list the first three of our scheduled stops," said Renolf as he skimmed the *Comet* away from little Iapetus. "And they are the outermost ports of call in the solar system, from a biological viewpoint. I had not originally planned it, but out of curiosity I wish to touch upon Saturn itself, and see what there is to see."

There proved to be little to see in the blinding haze of Saturn's thick and writhing atmosphere. Where the atmosphere ended, and the "ground" be-

gan was a moot question, as the giant planet was little more than semiviscous liquid. And Renolf did not care to stay long when he saw his companion flushed and miserable from the great heat which worked through the insulated hull.

But before they left, they came upon an "island" of solidified material on the boiling seas—yet in area it was probably more in aggregate than the total land surface of Earth! In the central portion of this land mass they were amazed to find a prolific plant and animal life. It was the Carboniferous Age of Earth brought back to life! They stayed only long enough to observe a few dozen scaled beasts haunting the tremendous fern forests.

"Behold!" said Renolf. "A life at its near beginning! From those monsters will one day come a race of thinking beings. It is one of Nature's laboratories."

Renolf consulted his complicated space charts and set a course. "Now for Jupiter and his moons. Fortunately, that planet is at present on the same sun side as Saturn. Saves us considerable time."

Yet it took the silvery *Comet* three weeks to leap the enormous gap between Saturn and Jupiter. Now and then the repulsor dials showed a sudden discharge. Meteors, stones of space, ricocheting off harmlessly. The terrific momentum loosed at such semicollisions—enough to knock the *Comet* degrees off its course—was almost wholly buffered. Inside they felt but the faintest of jars. Dora vaguely understood that it was scientific magic that could so ease the otherwise great shock—Renolf's scientific magic.

TIME did not drag. Time only drags when there is boredom. There could be no boredom in space. Not when each glance at its manifold mys-

teries occasions a limitless train of wondering thought.

The giant among planets, with its great "red eye" gleaming at them cryptically, Jupiter dissolved out of the void rapidly. Renolf laid a course immediately for Europa, fourth largest of its nine moons.

Smaller than Earth's Moon, it proved to have an atmosphere as tenuous as Titan's had been. Strangely, however, the oxygen content was low. So low that even in its younger days it might have been unable to support life. It had a queer topography, too—displaying remnants of mountain chains that must once have been very great. And a dull, rusty coloring lay over the whole satellite. As though some cosmic giant had sprinkled red pepper over it, preparatory to eating it whole.

Signs of former civilization were rare. The two Earthlings sensed that something on this small world had prevented its full development as an abode of life. Age-old ruins gave the impression of a culture that had never gotten much above what Earth had even then, in her short life.

"Another mystery here," reflected Renolf. "A civilization throttled at birth, so to speak. Something brought about its doom long before the hand of Time had chilled their planet." He pursed his lips. "One thing, though—Io, the next nearest moon, is close indeed. The answer might lie there. When rival civilizations lie only 150,000 miles apart——"

And the answer did lie on Io. An answer more lucid than Renolf could have dared to hope. Fed throughout the ages by Jupiter's life-giving rays, and very close to it, Io had evidently enjoyed a long period of propitious life. Its topography, too, was jumbled, jagged. From a distance its surface looked like the pitted surface of Earth's Moon. Yet it must have sheltered a numerous race, for its ocean beds were

not extensive, and around them were immense areas of level land. In the ages gone they had been fertile farm lands.

Coming upon their first relic of former civilization, Dora gasped incredulously. Even Renolf jerked his eyes wide. If the transparent domes of Titan and Rhea had been gigantic, these man-made dwellings on Io were super-colossal. For a hundred miles in either direction squatted an unbelievable mass of solid structure. In height it could have been no less than a mile.

Dora blinked her eyes in disbelief. A solid building doubtless capable of holding all of Earth's population at once! At widely separated intervals on the perfectly level roof were smaller square buildings, like chimneys of an apartment house.

For a moment the girl thought she saw smoke coming from them. Then the incongruousness of the thought shook her with silent laughter. For, obviously, the structure was no more than an ancient relic. A forgotten tomb, like the hemispheres of Titan had been. Meteors had crashed through the roof in countless numbers, and when Renolf brought the ship lower, it looked like a sieve.

Renolf nodded. "Another example of rational life's tendency to become independent of Nature. In this sort of community house, a world in itself, the intelligence of Io lived on after their world had refused to nourish them further. What a great science this represents!"

AT the first opportunity, of course, Renolf slid the *Comet* through a meteor-made rent in the roof, for a glance at the interior. To their surprise, there was light below. They looked up startled to see the heavens as though nothing were between them. "What a great science indeed," breathed Renolf. "When it could produce a substance

transmitting light and radiation only one way! Here they lived as though out under the stars. Yet protected from the cold and airlessness that came over their dying planet."

"But why," asked Dora, "should such a tricky one-way glass be used? Why not the transparent domes of Titan?"

Renolf shrugged. "I cannot fathom their every secret. Perhaps they had enemies whose prying vision must be shielded off. More likely something we cannot understand."

Renolf dropped the *Comet* through the great hole torn out by the meteor. On all sides they saw a maze of chambers. Their contents, not made of the resistant stuff of the walls, were in every stage of ruin. It was mostly dust. The huge structure was a honeycomb plundered by time of its formerly precious contents. A husk, like a petrified sponge.

Then they came upon large lateral tunnels in the depths of the building. Probably the means of transport from one part of the unit city to another, they stretched endlessly. With the perfect transparentness of the structure's skeleton, allowing the somber light of overhead Jupiter through, Renolf guided the ship along one tunnel. He was careful, not knowing what lay ahead.

Chilled by some somber thought, Dora suddenly noticed the ship had come to a halt. She looked around. Renolf was staring out of his side port eagerly. Dora went to his side. Then she saw too what had disturbed even the emotionless super-Renolf.

The tunnel, like an artery to a great heart, had opened abruptly into a Gargantuan-cleared space. It was like the courtyard of a castle. In the emptiness that reared a mile upward to the very roof was a slender column of stone. But slender only in comparison to its height. By Earthly measurements it would be capable—were it hollow—of

holding four Empire State buildings, one on top of the other.

"What is it?" asked the girl involuntarily.

"A glorified totem pole," answered Renolf quickly. "See?—it is carved and arabesqued. And more"—he brought the ship closer to it—"on it is engraved a form of writing! Lord, if I could only decipher it! Perhaps the whole history and science of this race are there in letter forms!"

It was possible at that, for the writing was small. The indelible records of a dead race, inscribed on imperishable material! The alien words seemed to spiral around the column. One could then start at the top, and given enough time, read to the bottom, without having to turn a page or ransack libraries.

Imbued with a desire to test his theory, Renolf raised the ship in the open space around the pillar. Just below the roof, it ended in an elaborately carved stoa. The figures of the group were strange and shocking to Earthly eyes, resembling no creature of Earth. But Renolf was more interested in their records than their physical form. He came upon the beginning of the writing.

THEN an exclamation was wrung from his lips. He brought the *Comet* closer, not a yard from the column's surface. "Look! This is not writing, as the lines below are. This is a form of hieroglyphics—ideographs—like the Egyptians used!

"It is a record made for alien eyes to see and understand. That must be the sun symbol—a small circle and radiating lines. There's Jupiter—circle with wavy lines and an elliptical red spot. A space ship—see that?—a windowed globe with dots around it. Why, with a little concentration, I should be able to get the drift of the meaning behind those symbols!"

And the upshot of this discovery was that the *Comet* hovered around the in-

scribed column for two weeks. Upheld by its diamagnetic auxiliary engine, it crawled beetlelike around and around in a slow spiral. Dora, with some hesitation, granted the super-Renolf an extension of time—twelve hours out of a day instead of only eight. She also volunteered to help. At Renolf's dictation, she took down a bulky mass of inarticulate notes, as he translated tirelessly from the cryptograms.

It was hard work, and no normal man could have gotten anything from it. The super-Renolf, however, one day summarized what the record told.

"The details are too obscure to repeat. In the main I have learned this: Io and Europa grew up together as abodes of intelligent life. For ages each lived its own life. Then telescopes made them aware of one another's existence. Much later, when their science had grown to great heights, space travel between them became possible.

"Europa, somewhat older in civilization, waged a terrific havoc on Io, nearly decimating its races. Satisfied, they returned and forgot their former enemy. Enmity had grown up between them for reasons I could not quite grasp. But Io builded anew, in secrecy.

"What was perhaps ages later, she arose in a mighty wrath and wreaked vengeance on Europa. But a terrible vengeance it was! A horrible chemical was dumped wholesale in the other satellite's atmosphere—a chemical that in a few short years took most of the oxygen from her atmosphere!"

Renolf shuddered a bit in the telling. "That accounts, you see, for the strange lack of oxygen in Europa's atmosphere. That the chemical had in it iron in some form or other is obvious, because as we saw, that poor doomed planet is at present dusted with red rust. That is the saga of life when these small bodies were young and propitious.

"The record goes on to tell of Io's gradual freezing over, and their successful stand against oblivion. Notice—their *successful* stand. The record ends, saying that, through with the struggles of youth, their race was entrenched, agelessly, against destruction."

Renolf ended in a low mutter: "Again that mystery of what happens to great civilizations. They were invincible against Nature, and now—they are gone!"

"Isn't that record a clue?" spoke up Dora. "As Io destroyed Europa, perhaps Ganymede or Callisto destroyed Io!"

"You haven't the time sense," returned Renolf disparagingly. "Ganymede and Callisto, being much larger, cooled down much later. Civilization on them did not reach such a peak till long after the people of Io had become independent of Nature. And, not fearing such a formidable enemy, what could a struggling young civilization inspire in the way of threat? The record, by the way, mentions that the two larger satellites had been visited in space ships. The Ioans found only barbaric races, with no conception of life, on other worlds.

"No, the Ioans, living in this and perhaps similar unit cities, could fear no mortal enemy. Electronic screens, which they must have had to repel meteors, are proof against man-made weapons. Any possible warfare destroying these people should at the same time have razed this city to the ground anyway.

"I wish I could decipher the written records of that column. There surely would be important clues. But that would be impossible. There is no key to the script. I even doubt a key could be devised. For what basis of comparison could link their thought with ours, living as we did, separate lives on separate worlds?"



RENOLF jabbed viciously at the controls. He muttered added words that Dora could barely catch: "Maybe after all it is impossible to fathom such a great mystery—the mystery of the dooms to the solar system's various civilizations."

During his free periods, Vincent would talk over excitedly with Dora what things they had observed. The shadow of the superman had again fallen over him heavily. Perhaps it would be so the rest of his life. Dora quailed at the thought. Married to a man whom she loved eternally, but who was dominated by an other self. All his life Vincent would be thus imposed upon. The superman would step from one great project to another. First it had been reform of Earth. Now it was prying into the solar system's secrets. What would it be next?

But something goaded the super-Renolf more, secretly, than his lust for knowledge. It was the mystery of the menace. That menace which had made itself known to Dr. Hartwell. Had whispered to him in unintelligible tones of threat. Had perhaps caused his death!

This was another of those inexplicable intuitions that had no shred of proof behind them. Like the collapse of the cliff on Iapetus. Somehow it seemed there might be a whole chain of events connected to the presence of a menace in the solar system. Renolf felt—and cursed his insufficiency, superman though he was—that he was missing a vital link in that chain. Where—where could he find it?

## X.

CALLISTO, a satellite of Jupiter's as large as Mercury, proved to have an appreciable atmosphere, largely oxygen. In the past it must have had an envelope of air comparable to Earth's. For the first time in their jaunt among

planet corpses, the travelers found the ruins of underground habitations. The Callistoans had evidently found it more economical or less troublesome to burrow into rock and there take a stand against oblivion. Perhaps they had been mole creatures, always living in the ground. The problem was unsolvable, for they had left no records, as the Ioans had.

Meteors had again wrought a tremendous havoc in the ages, as they must on any world with a thin air blanket to protect its face. They had laid bare a complex system of honeycombed labyrinths. Exploring down one meteor shaft, the Earthlings were astounded at the endless ramifications of its catacombs. It was like a multiple beehive. A glorified termite hill. The numbering system alone must have been of a sort to stagger human understanding.

Imbedded in the solid rock, ribbed with a metal that showed no appreciable sign of corrosion, the strange subterranean dwellings—there were many over the planet—defied the inexorable hand of time. Yet they were empty. Devoid of life. Devoid even of signs of life. All the contents had long since swirled to dust.

There were huge chambers at the bottom, miles below. These might have once throbbed and hummed to mighty machines. Now there was but an even layer of fine particles over the adamant flooring. The cabin of the *Comet* again became infused with a haunting sadness. The million-fold sadness of a globe trotter returning home to find his abode a dilapidated ruin, tenantless.

"Another item in the great mystery," Renolf said as he headed the ship for Ganymede. Ganymede, the giant among satellites—so large that it could have exchanged places with Mars without seriously disturbing the balance of the solar system.

There was something Earthlike about



it at first glance. A dead seed of the void, true—but it subtly hinted that in former glories it had been like green Earth. Green oceans, luscious vegetation, snaking rivers, vast prairies—it had had them in eons gone. And its peoples had been startlingly Earthlike.

This they found out from the numerous carved relief works in their ancient ruins. The ultimate in Ganymedian living quarters seemed to have been strangely impermanent dwellings. The ruins were ruins in every sense of the word. Every wall, every partition, every roof, was down. Flat and eroded to crumbly sections that were vanishing slowly, age by age. None of the ruins was extensive, but their number was legion. They had not congregated as closely as had, for instance, the Calistoans in their subsurface beehives.

FROM a number of related phenomena, Renolf deduced that the civilization of Ganymede had also reached that peak where they had been independent of Nature. One thing alone indicated that they must have had a comparatively long-lived existence. Their bas-reliefs had, among representations of all the solar system's various worlds, carved pictures of Earth, showing oceans and continents very like those existing in the present.

"Ganymede," elaborated Renolf, "along with Mars, due to its size, had a period of propitiousness to organic life not far removed from our Earth-Venus era. Perhaps only a few hundred thousand years ago these people thrived! Certainly the carving of Earth, distorted though the land and water areas are, shows they must have observed our home planet not so long ago. Long, indeed, after Earth's crust had cooled and taken on a semblance of its present configuration.

"Their cities, so flimsy that today they are dust, must have in their age been protected by shields of force

alone. Not domes or roofs of time-defying materials like on the other worlds. So then they, too," he concluded in perplexed vexation, "reached a deathless state. And they, too, like the others, succumbed to oblivion at the last. With a science grown greater than their every living need—they died away!"

"Is it possible," asked Dora, "that there is some little thing without which organic life cannot survive, and which even science could not give them?"

"Nothing," said Renolf with firm conviction. "Why, even on Earth today, if mankind were suddenly forced to live independently of Nature, it could be done. Not with Earthly science, no. But with the science I have at my command, yes. Atomic power solves the heat and light problem. Voluntary transmutation would give food and water from the very rock atoms. Air to breathe, the biggest problem of all—I could devise automatic machinery for that, too."

"But you are a superman," reminded Dora. "Perhaps your science is even above—"

Renolf chuckled. "Unthinkable. True, a composite of ten of Earth's most brilliant minds, I am a supermind. But I cannot represent more than a few thousand years of human evolution. These alien scientists—they could have taught me many a trick, never fear."

"Then what answer is there?" asked Dora in sudden vexation. "You claim they must have had a superscience, greater than yours. And yours, you say, is adequate to make mankind supreme from Nature. Yet the fact remains that these civilizations do vanish!"

But Dora had simply voiced the enigma to which Renolf struggled to find an answer. "We have yet Venus, Mars, Mercury, and Earth's Moon to visit," returned Renolf calmly. "Per-

haps on one of them we will find an answer."

But Renolf neglected to tell her what for some time had been in his mind—that there was some connection between these lost civilizations and the menace! Despite his seeming calmness, he was in a turmoil. Each time the dreaded sibilance pounded at his brain—which happened at periodic intervals—Renolf sprang to special instruments and tried to trace back the signal to its source.

Each time some inexplicable force knocked the workings of his apparatus awry. As though the menace knew what was being done and resented being traced. No trick of Renolf's mighty science sufficed to change that inevitable result. He spent long hours in his small laboratory devising new types of tracer cages to trap the incoming radiation and orientate it in space. It seemed unavailing labor.

VENUS being somewhat closer at the time than Mars, Renolf took the long jump from Jupiter to Earth's sister planet.

It was no different than any other part of their travels, except for one thing. While passing the asteroid belt, flying high above it to avoid collision amid its crowded area, the *Comet* very nearly blundered into a jet-black planetoid. Only lightning action on the part of Renolf had saved them from disaster at their terrific pace.

Renolf insisted his instruments had not been wrong—that the black planetoid had come up to them out of its prescribed orbit! Not an error in astronautics, but a slip of the laws of nature. That explanation was all he could give Dora. Yet within himself he was confronted with another explanation no less fantastic. The menace had moved again! As though this were some cosmic chess game in which Renolf was not a player but a pawn!

Venus—ever clothed in cloudy veils.

What could lie beneath? Despite their soul-awing trip out to distant Saturn and Jupiter, Dora felt more interest in Venus than any before. Those other worlds had been dead. The well-known evening star of Earth's skies should be alive.

And alive it proved to be. Under its tepid, moisture-laden atmosphere thrived an organic life more varied than Earth's. There were immense jungles, turbulent oceans, sparkling blue lakes. There were myriads of animals, birds, insects. There was rain and thunder, storms and lightning. And there were living, intelligent creatures.

A civilization in the making. But not yet as high as Earth's. The coasting space ship hovered over water-drenched villages of thatch and wood. Awed denizens of the primeval landscape stared aloft in fear. They were repulsively amphibian in structure, half-seal, half-beast. Yet they had large, well-shaped craniums. And they had weapons, clothing, household paraphernalia.

Renolf did not attempt to land anywhere and communicate with the inhabitants. There could be no profit in it. It could solve no part of the great mystery. But he did—after carefully analyzing the air—swing open the side port. The two space travelers reveled for a day in the breath of a rainy, pungent atmosphere. Artificial air was so stale in comparison. And with this taste of things natural, Dora insisted that they land somewhere and walk for the first time in months on something besides the *Comet's* metal floors. Vincent enjoyed the adventure as much as she, although they were soaked to the skin. Dora even wondered how fresh meat would taste, but Renolf vetoed the idea firmly.

"There is something about primitive things," said the girl, just before they reluctantly reentered the ship, "that warms one's whole spirit. Now those

artificial civilizations—I wonder if those people could have been happy. Everything artificial. No fresh food, no exhilarating breath of pine-scented air, no freedom to roam—I wonder."

Vincent agreed with her, but Renolf did not—later. "Mere animal happiness. A joy of living that is fragile and unlasting. Rational life grows to a point where happiness lies in the mind. Those artificial civilizations had mental happiness inconceivable to persons of this sort of world. Your scientist of Earth—he knows of that. I have felt it time and again. It is not lasting, but then no joy is. Your father—he knew a moment of divine ecstasy: When he saw me, a superman of his creation, sit up with a new knowledge in my eyes."

"A divine joy," murmured the girl sorrowfully, "that brought him to his death!"

"He paid the price gladly," said Renolf calmly. And for a moment Dora hated him—the super-Renolf—for the words. Then, realizing it was woman's weakness, she stilled her anger. After all, it was atavistic instinct to grudge mental attainment. An atavistic instinct only too rampant on Earth. Her father had, after all, done a great thing. Had shaped a superman from crude human clay. And in the doing he had been supremely happy—that Dora knew.

They left the steaming hothouse that was Venus.

DESPITE Renolf's misgivings—for the chances were even either way—Mercury proved to have signs of former civilization. A civilization comparable to any of the others. But only on the night side. The other side, always facing the Sun, was an inferno of blinding radiance and smothering heat. Almost from the first, apparently, the people had taken measures to protect their race from oblivion. They had burrowed into the sides of stupendous mountains. Rock-ribbed and beamed with enor-

mously thick metal pillars, their cave-like cities had withstood the pounding and wearing of eons. Somber in eternal starlight, the night side of Mercury had once teemed with a great civilization.

The Earthlings gazed with awe upon the ramifications of one city whose heart was revealed through a long-past catastrophe which had shorn away the entire side of the mountain site. The bewildering maze of corridors and conduits, bored through the mountain in hundreds of cross rows, like a tree stump invaded by burrowing insects.

Outjutting from the intact cliff faces were great flat platforms. Landings for air craft. Or if not air craft, then space craft. The apexes of the mountain were adorned with hemispherical, adamant domes, as though they had been crowned kings.

"An astronomical station," remarked Renolf, sending the *Comet* close. "In a way, Mercury is ideal for stellar observation. It being closest to the Sun, from it would be seen all the planets at full and at their nearest. The Mercurians must have been eager astronomers, must have gazed wonderingly at the sister planets from the first.

"What with the eternal night, a thin atmosphere, and perfect oppositions, they were perhaps the first of intelligent life in the solar system to conjecture as to other civilizations. And if those big landings are of a late period—when air was un navigable—then they must have had interplanetary commerce. And as they were practically contemporary with Jupiter's two largest moons, those three worlds may have for centuries exchanged mutually beneficial products, inventions, and knowledge."

Renolf sighed then. "But as with the subterranean beehive dwellings of Calisto, and the surface web works of Ganymede, so with these supermodern caves—dead! Void of life. Dusted with the particles of long-decayed organic bodies."

And now even Dora faintly wondered at the age-old significance of civilizations that the worms had left. Having looked upon seven planetary tombs, she, too, found reason to wonder why they had all given up the ghost. In their long trips from body to body, Renolf had itemized for her the duration scale of the solar system. Had inculcated patiently the time sense.

Dora was now able to reckon with eons and millenniums as though they were days of the week. And, knowing that the infinitely slow progress of organic evolution took something like a half billion years to result in human-like intelligence, Dora was able to appreciate the mystery of civilized life dying away in less than half that time. The earliest civilization, probably that of little, quickly cooling Rhea of Saturn, expounded Renolf, could not have been further removed in time than a paltry ten million years.

"Really," Renolf had elaborated, "the length of time needed for evolution to progress from a cell spark to a thinking being is far greater than the difference between the crust formations of the various planets and satellites. In fact, all organic life in the solar system is contemporary.

"But Rhea and Europa preceded Io, Titan, and Earth's Moon by some two to three million years, in culminating in intelligence. They, in turn, preceded Callisto and Mercury by a few million years. They, in their turn, were some million years ahead of Ganymede and Mars. These last two were that much ahead of Earth and Venus. And we are some few million years ahead of Saturn and Jupiter. But, of course, on their somewhat steamy island crusts at present, as we saw on Saturn, are species of animal life that will eventually evolve rational creatures. In brief, with a comprehensive time sense, one expects each civilization to endure for those few

million years separating them. Why, in the name of reason, should they not?"

RENOLF speared the *Comet* close to Mars. He was both desperate and eager. This planet had been the last, perhaps, to develop intelligence in the cosmic time scale. Then, too, Mars had always been the apple of Earth's imaginative eye. From the time of Kepler on, human minds—and great ones—had gazed on the garnet planet, and wondered. The mystery of its canals was perhaps the oldest of astronomy's many unanswered queries.

"I don't know why," said Dora, "but I feel more excited about this than any of the others. Maybe there's even—even people here. Living people, I mean!"

"There should be," answered Renolf. "The Neolithic Age of this planet could not have been remoter than two million years. The race should have survived that tiny interval, considering the half billion or so years that organic life survived before that."

But—

That "but" came true. It hung unvoiced in the cabin of the *Comet* as Renolf plunged the ship downward with belching fore jets. Surprisingly, the cabin had become warm. Renolf had had to use a dozen blasts of deceleration to check speed. Mars had still an appreciable atmosphere. Then the hull had cooled—and the cabin—and Renolf had changed to diamagnetic control. Below was desolation, barrenness, desert waste. Sad and lonely. A soil that had once teemed with myriads of germ life, now glinted sterile in a small sun's gentle glare.

But the Earthlings were not concerned over this. Rational life, if there were any, would not be a part of the desolation. Intelligence had risen above planetary death on those other worlds. So it must be on Mars.

Then Dora pointed, trembling uncon-

trollably. Just peeping over the clear-cut horizon was a man-made something. The *Comet* sped toward it like a bloodhound on a fresh spoor. Before arriving, they could see that it was some sort of city. It was at the intersection of two unending lines of white. At the crossroads of two canals. A city of slim spires upreared in countless confusion, like a bunch of saw grass. Many of the spires were broken short. For a moment, from the distance, it looked like a comb with many teeth out.

Then the "but" fulfilled itself. Hovering a hundred feet above the tallest towers, they saw it to be a city of ghosts. Unless even they had left. Over it was a half-egg-shaped transparent dome, like the domes of Titan. Dead and lifeless. A man-shaped husk. An unwitting tombstone for the race that had once inhabited it, made it ring with the boisterous noises of warm life.

A bleached skull on the desert, meteor-torn and lichen-rotted, it seemed to grin its ghastly oblivion to the life that had once been its soul. A corpse, congealed in a frozen semivacuum, that had never been given a decent burial. Repulsive in its ancient decay, fascinating in its suggestion of former glory.

And the canals—they were incredible waterways in truth, bridged over with a continuous transparent sheath, like the city itself. The Earthlings followed along one of them and at every intersection was a similar city—all lifeless.

"THIS Martian civilization was unique," said Renolf, after they had spent a day wandering over the planet. "They had a great number of those spired cities, all interconnected by waterways, and everything inclosed in the air-tight dome material."

"But why would they need waterways?" queried Dora. "Surely they could have used some means of transportation less primitive."

"Transportation?" Renolf smiled. "What do self-contained, unit dwellings need with transportation! They made everything from the desert molecules. No, the canals had another purpose. Perhaps they were scenic avenues, like those of Venice or Holland, down which the Martians drifted in boats, in peaceful idleness. With the ultra-scientific machinery to take care of their physical necessities, they must have had much time on their hands. Perhaps they had regatta, water carnivals, parades, and races along the thousands of miles of these artificial rivers."

Renolf maneuvered the *Comet* high above the ground. The canals dwindled to a network of fine-spun lines. "These artificial waterways have been seen in Earthly telescopes for some time, but so faintly that there was always controversy about it. Perhaps the main reason they were discredited was because the human mind of Earth is so unwilling to believe in extra-Terrestrial life. What a story we will have to tell when we get back! I think I shall publish a book on what we have seen, just for the one reason. Just to see what a shock it will be to our little hide-bound world!"

With quick movements, Renolf sent the *Comet* flaming away from Mars. "Our next and last stop will be the Moon—our own Moon. On that body we may expect to find a dead civilization dating from the time of Io and Titan. I am, of course, past hoping that there could either be a living race there, or a clue to the doom that wipes out all civilizations."

Then, it being time, he removed his headband. "In a way," he said, "I'm sort of glad the trip is nearly over. It's been no less than four months that we've been in space."

Dora nodded. "It will be good to step on Earth and be free once again. I've longed for it. That short spell

on Venus was only enough to tantalize us. Oh, Vincent, don't you see how much the super-Renolf is riding us, tyrannizing over us? And what, after all, has he accomplished? Nothing except to gather perfectly useless knowledge about dead things, and probably a headache from thinking about the mystery of the dead planets."

Vincent chuckled. Somehow, he could laugh at the super-Renolf's doings, even though he was a part of him. "A headache and no more is right, darling. He stretched our honeymoon to an exasperating length, but he hasn't any more excuse to stay out in space. That is, after we've been to the Moon."

"But I rather suspect," said Dora, eyeing her husband accusingly, "that you have helped him more than hindered in all this. If you had will power, Vincent, you would not put on the headband."

"It's like a drug," admitted the man.

"I'll have to think of a cure."

"No use, sweet. While I live, the super-Renolf lives."

"You could pass on the secret. Then your conscience——"

"Horrors no! Not one man in a thousand would use the power it gave him in the right way."

"You give your integrity a lot of credit!"

The young husband grinned—seriously. "Certainly I do. Your father knew very well to whom he was giving superthought."

Dora looked up suddenly. "What will the super-Renolf do next?"

"Who knows? There are many things that——"

"I thought so. I am married, then, to a man whose will is free only half the time or less."

"You can divorce me."

"On the grounds of mental cruelty. Fine! But at present I'll have you. Come and kiss me, lover."

THE *COMET* plied its way Earthward serenely.

Yet before they came to the satellite of their home planet, a thing happened to disturb that serenity. Dora, gazing at the bright small glow which was Earth, became suddenly aware that the *Comet* was decelerating. Hastily grasping a wall ring for support, she shouted for Renolf. He came running from his laboratory and dashed to the controls. Puzzled, he looked at the instruments.

"What's wrong?" queried Dora. "Why should the ship increase deceleration when the engines haven't slowed their pulsations a bit?"

Renolf had no chance to answer. The *Comet* seemed to suddenly become a thing of caprice. It spun them off their feet and flung them against one wall. Then, like a ship in heavy seas, it rolled them the other way, and at the same time pressed them gaspingly against the floor, as though under the influence of many times normal gravity.

A moment later it had half catapulted them toward the fore part of the ship, and Dora's eyes caught a fleeting glimpse of the starred sky whirling madly past the side port. She gasped in pain then as her leg was crushed against a solidly anchored table leg. Next moment a pair of strong arms in-folded her, held her from being flung away again as the cabin gyrated fitfully.

Five minutes later it all ceased as suddenly as it had begun. Once more the *Comet* plied its way steadily with normal deceleration. The two Earthlings arose from where they had clung to the table, faced one another in bewilderment. Despite the roughness of the experience, their bruises were light. They might have been badly hurt under normal conditions of full gravity.

Dora was left to her own conjectures about the inexplicable cause of the *Comet's* waywardness. Renolf had seated himself before the controls, study-

ing the instruments in profound detachment, making no answer to her query.

*Had the Menace warned again?*

# XI.

"I SUSPECT underground habitations," confided Renolf. "For the simple reason that Earthly telescopes would have discovered cities on the surface." The *Comet* was drifting over the harsh lunar landscape. In the zenith of the heavens floated the Earth, like a balloon. Low over the horizon was the Sun, so brilliant now that they had to wear smoked glasses to look at it. Renolf nosed the ship across enormous mountain ranges.

Finally they came to the "crater" Copernicus. And here they saw evidences of former life. The apparent bottom of the huge crater was the artificial roof of an underground city. So strongly had it been made that only in two places was the sturdy shield damaged. The size of the holes attested to the tremendous weight and bulk of the meteors that had managed to burst through.

Into one of these splintered gashes Renolf lowered the ship. Using their powerful nose searchlight, they distinguished what remained of the ancient dwelling. A series of vertical shafts gave access to the entire structure. They extended no less than ten miles down. Ten miles of intricate chambers, once the abode of a multitudinous race indeed! Renolf estimated there might have been twenty million individuals, if they took no more room for living quarters than Earth people.

And, of course, the place was absolutely devoid of life. Yet the Moon people had been somewhat exceptional metal workers, for much of their machinery was intact. Of interior cars, elevators, monuments, and such, a great deal remained yet uncorroded.

"A race of supermechanical endow-

ments," concluded Renolf. "For this represents an antiquity of millions of years. No other race has built such lasting machinery. And, beyond a doubt, at the time they were built, they were meant to last along with the race. The race, however—died out!"

RENOLF had come to accept more or less the inevitable. It was no less a mystery, but a mystery having no answer. The Earthlings visited several other craters. All, without exception, were underground habitations. "Which means," formulated Renolf, "that the craters, contrary to Earth's pet theories, are not natural, but artificial. The Moon people, when their air became too thin to support life, dug in to preserve themselves.

The craters could be explained in this way—that they first sunk a shaft in a level spot, hollowed out their future home, and used the rock matter above as building material, compressing it to a small bulk for strength. That left the depressions we so naively call craters. Whatever they could not use they piled up as the rim surrounding so many of them.

"But there are literally thousands of craters!" gasped Dora.

"And there must have been billions of people," added Renolf. "Far more than the planet could have been capable of supporting as Earth now supports her population. That indicates, you see, that after the planet died, so to speak, the race rose to its greatest heights, scientifically and numerically. And on Titan, Callisto, Mars—all the rest, the same. They increased, multiplied, when Nature had failed them. What in the name of the universe could have then eliminated them? One great civilization after another!"

Then they came upon a crater whose floor was intact. Dora exclaimed in excitement, for how could they be sure there were not living people below it?



Renolf, too, became excited. Then the answer came—from above. Even as the *Comet* drifted down, closer and closer, a great shadow swept over them. Instinctively Renolf stopped the ship, and not an instant too soon. A titanic bulk plunged from the stars above, just missing the nose of the *Comet*.

The Earthlings looked at one another white-faced. Their screen would have been pitifully inadequate to shunt aside such a monstrous meteor. Suddenly Dora, looking downward, choked and pointed mutely. The meteor, missing them, had fallen into the crater. Intact a moment before, the artificial roof was now marred by a large hole.

"If there are people down there," gasped Dora, "they have just experienced a terrible catastrophe!"

"We'll go and see," said Renolf, once again calm.

They descended by the way the meteor had opened up to them. A half hour later they emerged. The meteor had done no more than crumple and destroy an empty temple. Those craters with unmarred roofs held no more of living creatures than the others. They left in a curious state of relief and crushed hope. It would have been a fitting climax to their spatial jaunt to find, at last, living creatures, but it would have been heart-rending to come upon them in the midst of a frightful calamity.

"Let's get back to Earth," said Dora, shuddering. "I've had enough. This exploring of dead planets is dismally depressing."

Vincent, with the headband off, agreed. But after they had slept with the *Comet* parked on the broad expanse of a flat plateau, Renolf decided that they must visit just one more crater.

"Tycho. The one with the curious radiating lines surrounding it. I must see what supermetropolis once reared there."

Renolf followed up one of the strange

white "lines," and even before coming within sight of Tycho, knew them to be enormous conduits. Whether for water or transportation or what, could not be ascertained.

THEN Tycho itself became a spot on the horizon toward which the *Comet* eased itself with gentle rocket pushes, upheld by diamagnetism. Suddenly the two Earthlings were thrown off their feet from where they had been standing at the side port. The rockets thudded valiantly, but the ship did not move, as though its nose were stuck in an invisible wall of resilient putty. Then the axis of the ship, under the hammering, shifted and the nose turned upward. With a belated surge, the *Comet* streaked skyward.

Renolf came to his feet quickly and jabbed at the controls. The rockets died out in the rear and came to life in the front. Then they, too, were shut off. Renolf studied his instruments.

"What happened?" cried Dora, staggering to a wall chair. She winced at a sharp pain in her ankle.

"I wonder," returned Renolf puzzled. "The jets did not fail—the diamagnetic engine is functioning. Everything is all right."

"But we struck something!"

Renolf waved an answering hand toward the port.

"I know we can't see anything," said Dora. "But the ship did strike something—an invisible something!"

Renolf made no answer. Instead he carefully maneuvered the ship, pointed it toward Tycho, and sent it forward at a slow crawl. It went twenty feet, fifty, a hundred. Then abruptly, without a sound, it came to a dead stop. Dora looked around bewildered. Outside there was nothing, not a shimmer or suggestion of even a screen like that of the *Comet* itself.

Renolf backed the ship away, moved at right angles to their destination for

a few hundred yards, and then headed for Tycho again. The *Comet* crawled forward slowly, then stopped. Renolf moved a lever. The rear jets burst out in a sudden thunder. Yet, though the ship trembled like a live thing, it stood still!

Renolf cut the rockets, and let the ship float on diamagnetism. "We are pushing against an electronic screen of tremendous strength. Something like our own screen, but a hundredfold more adamant. I used a jet force of over a million milli-ergs. Our own screen must have simply buckled and pressed flat under the strain."

"What can it be?" asked Dora in a whisper. "It can't be natural."

"Hardly," agreed Renolf.

"Then some—some person, some mind, must be behind that screen!"

"Logically, yes. And I'm going to find out——"

Suddenly he stopped speaking. There swept over the two Earthlings a subtle wave of prickling sensation. The air of the cabin electrified. The duralumin walls began to glow eerily. Renolf made a gesture toward the controls, alarmed at the phenomena. But he found himself curiously unable to accomplish his moves. Almost as though he were paralyzed!

Waves of indefinable energy flowed over the two Earthlings; like graven images they sat. Unable to summon any voluntary action to their muscles, they waited for—they knew not what. Renolf concentrated mightily, thoroughly alarmed now, straining to break the intangible bonds. His veins stood out purple, his muscles knotted. But something had congealed his centers of locomotion. Then he relaxed resignedly.

Dora, frightened, wanted to cry out, wanted to creep to the man's protective arms. But the mysterious force held her enmeshed as though in chains. She was barely able to roll her eyes in

Renolf's direction. And in them she saw a strange look of expectancy. As though he were listening for something.

At the same moment she seemed herself to hear, faintly and inarticulately, a "voice." But not a spoken voice. A disembodied voice. A voice in her brain. And for the next few minutes she continued to hear that ghostly voice, always indistinguishable. But the meaning seemed to be ever on the verge of her understanding. She caught at times snatches of meaning. She recoiled at the broken suggestions.

RENOLF, however, understood more clearly. His ten-brain contact gave him a vaster conception. The mysterious telepathic voice became rapidly understandable to him. Unable to do anything else, he concentrated on reading the message it conveyed. As he later translated it for Dora, the voice ran as follows:

"Time has passed to a certain extent since last something intelligence made bumped into my protective force wall. A long time in your conception, but not so long in mine.

"You the taller creature, have difficulty I see in understanding this message, simplified though I have made it. The other creature cannot understand at all. You must both be of a low mentality compared to the other intelligences which have at one time or another arisen here in the solar system.

"You understand quite clearly now? I see that; I will go on. You furnish me with a momentary diversion from my eternal thought. It is my whim to humor myself by explaining who I am. I am the Spawn of Eternal Thought. I have come from the void. Our race grew up on the planets of a sun so remote, and so different from this one, that to explain is impossible.

"In short, our race evolved from materialism to pure thought energy. It took a period of time to which the life of the solar system is a mere instant. Our

race, instead of growing into more and more individuals, condensed through long ages into fewer and fewer individuals, but each more powerful in thought energy. At last came the great day when our race merged completely into one mind essence.

"I am that mind essence. I am the end result of evolution on my planetary system. For long ages then, I the Spawn of Eternal Thought, lived in bliss, contemplating the greater mysteries of the universe. It is not conceivable to a material creature like you what sublime happiness there is in absolutely inactive thought. To you it would be madness. To me it is the true life.

"Now, I see the question in your mind: 'Why am I here, if I was so happy and content in my own world?'

"I will explain. Wrestling with the cosmic secrets of the astral universe, my thought energy slowly weakened. Thought takes energy, and that energy was not being renewed. Thereupon, with my immeasurable powers, I disintegrated one of my sun's planets and absorbed it into my being. That sufficed for another great age. Then I felt the inexorable drain again, and disintegrated another planet to feed my essence. One after another, I used up all the planets and finally the giant sun itself. Thereupon, I was sufficient unto myself for a long time, so long that there is no number in your puny tables to express it.

"Inevitably, came the time when I must search for new fodder for my eternal thought energy. I then wafted my being to another sun system and consumed it. Then another and another. Now I am here on this one.

"This one, however, is unique, in that it had developed on one of its bodies a race of thinking creatures of comparatively high order. That was on the fifth satellite of your sixth planet from the Sun. I saw immediately that by

absorbing their developed mind essence into my own, I was renewed for a short time. But when that short time was over, another race had developed, this time on the first satellite of the fifth planet.

"The next race to develop to a degree of intelligence suitable to feed my mind essence, was located right here on this body. And so on. Eight times have I fed from the evolutionized races of this solar system. The next race to feed my mentality will be your own, but that will not be till they have risen above their present crude state. Then, perhaps, I will procure three more rejuvenations—the second, fifth, and sixth planets.

"BUT, if you can understand, these are mere nibbles to my psychic appetite. Eventually I shall be forced to consume the worlds themselves. But they will supply my energies for periods of time—as you understand time—that are infinite compared to what you call 'ages' or 'eons.' After that, when I have consumed your Sun, too, I shall wander to another planetary system. I shall search for planetary systems in the future which are habited like this one. The intelligences of your races is still sweet to my taste. After all, planetary material is so bitter and has to be purified so greatly before I can absorb it.

"In duration I am eternal. I am the Spawn of Eternal Thought. I met one other such essence in my astral wanderings. But it was weaker than I. I conquered it and absorbed it. I am invincible, all-powerful, eternal.

"You are the one whose mind my will stumbled against, wandering about in the untarnished solitude of this planet system. For a time I was curious that your radiations were so strong, and so well-ordered. I thought of extinguishing you, like I did the mentality which created you back on your home planet. Instead, I have contented myself in toy-

ing with you, testing your powers. For your undeveloped state, you are strangely alert and well-mentalized. You intrigue me, puny being so grossly ugly with your little mentality. I could in an instant extinguish your tiny mind spark; I, who am a flame.

"Instead I shall let you live for a while. Let you squirm in the knowledge that at any instant I may annihilate you. And I shall let you plot in vain with your people against my downfall, for I am all-powerful, eternal, invincible.

"But go—I tire of radiating such simple thoughts. In a little while—an age from now in your simple conception—I shall arise and absorb your race's mind essence into my own. It is a great honor. And if—— But enough. Go!"

As Renolf heard the imperative command, a violent force seemed to clutch the *Comet* and fling it far out into space. Stunned, Renolf was barely able to whip his flagging senses alert. He jabbed weakly at the controls and managed to check the frightful acceleration. Then he slumped over the pilot board, completely enervated. The paralysis had drained his nervous system.

## XII.

TWO DAYS LATER, the *Comet* left the Moon at a mad pace. Its course kept it out of sight of the crater Tycho till they had gone halfway to Earth. Then Renolf breathed easier. "So far so good. I don't know what sort of chance we've taken, but I've got the information I want. I now know the limits of the energy wall that protects the alien being—our long-sought-for menace! It is a hemisphere twenty miles in diameter. I know, too, something of the nature of that screen, what its salient physical attributes are. I have even calculated, tentatively at least, what force would be necessary to disrupt it. And it is a staggering figure.

"The Spawn of Eternal Thought—as it so proudly calls itself—has shielded itself to the limit. It lies there like a diamond-shelled clam, waiting in calm tirelessness for its next period of—feeding! And we, the human race, are to be the next in its epicurean search for mental delicacies!"

Dora shuddered, as much at his look as at his words. For since the numbing revelation of Tycho's secret, Renolf's face had grown haggard, harried. A king might have looked like that, knowing an invincible enemy was slowly preparing to attack his kingdom and wipe it from existence.

Dora wished then, fervently, that they had never left Earth. That her father had never succeeded in making a superman. They had flitted through the solar system, reading part of its stupendous history, and had finally blundered on a secret never meant to be revealed to mankind. And knowing, what peace could there be for them? What good for the turkey to know it would end in a Thanksgiving dinner?

In answer to her thoughts, Renolf spoke: "Better that we know! Better the indomitable resistance of slave to tyrant than the unknowing bliss of herded steers."

"But it is such a dreadful knowledge! And so—hopeless!"

"Hopeless? That I will not admit."

Dora remained silent.

"You think," said Renolf with a stony smile, "that I have finally come to overestimate myself. I—a mere trick of superscience, as Earth knows science—facing an unthinkable superior mentality and refusing to admit preordained helplessness! The futile conceited courage of a worm before a hard-hoofed ox. Perhaps——"

Renolf suddenly broke off. His strong hand trembled suddenly as he raised it to his creased forehead. Dora read something in the gesture—something she had never seen in the super-

Renolf before. And it shook her to her very soul.

"Renolf!" Her voice was anguished. "You—aren't——"

There was a long moment of silence. In that moment a mind—hyper-human in its range, but yet human—saved itself from madness, by staring into the eyes of devotion and faith—and love—and gaining thereby a new foothold.

Renolf, breathing heavily, wrenched his eyes away from the twin pools of anguish that stared from Dora's face. "Weakening?" he suggested. "Losing hope? No. Yet I might have—with-out you—precious——"

It was the first time Renolf—the superman—had broken through his reserve to reveal his secret reverence for the girl who had been his unwitting guide and check. Stunned, blasted to the core of his being, profoundly shaken by what had leered threateningly from Tycho—Renolf, superman, had expressed hope in the face of supernal peril with his mouth, the while his soul had shriveled within him.

But now it would be different. Dora's loyalty, more powerful than her utter despair, must be matched by the best effort of which he was capable. Renolf faced Earthward with a new determination.

A GROUP of ten earnest-faced men stared aghast at the tall, youthful figure standing before them. A youthful figure, but in its face an untold wisdom. They were the Supreme Council of Earth, the body the Benefactor had formed to guide humanity to a better life. Sage men, learned and highly intellectual. The Benefactor, a ten-brain unit, had given impetus to the rise of the new order.

These men, a ten-brain group almost as efficient, were carrying it along. They had been chosen carefully. There was not a Judas among them. Wield-

ing a great power, the Supreme Council had, in the four months past, carried along the Benefactor's beneficent work. It had several times faced minor crises, and ridden over them. But now a greater, and far different, crisis stared them in the face.

Renolf had recounted to them what he had found on the Moon. Realizing he must tell the whole story or nothing, he had recapitulated the entire journey he and Dora had made to the planets. His simple eloquence left no room for doubt. Unwilling belief struggled over face after face. A cosmic voyage in search of a stupendous secret. Its amazing climax there at Tycho. And the man who spoke was none other than the Benefactor—a name already half mythical. Incredible as the story was, his word could be only truth.

Finished, Renolf took a deep breath. The councilors looked at one another in stupefied horror. There was a tense silence. Then the chief councilor found his voice. "What you have told us is hard to credit. Yet we have no choice but to believe. Of course, this is not as great a shock as it might have been, in that three years ago—just after you had begun to institute the New Order—you intimated that Earth might be in danger of invasion from other-worldly races.

"At that time we were more or less skeptical; remained so, in fact, until this day. And when you put through the plans of building a city in the Sahara whose sole industry was to be the manufacture of superpowerful, long range weapons, we were still skeptical. Invasion from space! Preposterous!"

The speaker paused, and his face grew suddenly haggard. "But now, knowing the truth, our only consolation—a pitiful and selfish one at best—is that the doom will not come for a long time."

"But come it will," said Renolf with conviction.

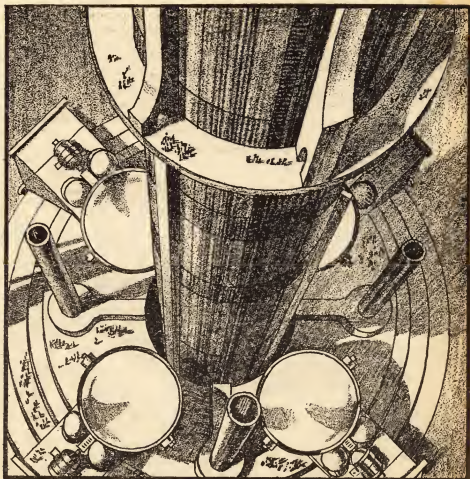
THE CHIEF COUNCILOR spoke again, showing his agitation in fluttery movements of his hands. "And, knowing the truth, it is enough to destroy our initiative. Why did you tell us? It were better kept a secret! What incentive have we now to carry on the New Order? All our work will go for nothing—with an inevitable doom over the human race, despite its remoteness!"

There was again a silence, and the councilors looked at Renolf in silent accusation. He had poisoned their minds,

telling them the truth. It would throttle their very spirits.

But Renolf's voice boomed out vigorously in the midst of the depressed silence. "We are not going to lose courage and hope. Nor are we going to rest in inactive consolation that after all it won't affect us, or our children, or even our children's children. Our duty is to fight the doom!"

"Fight it! How?" wailed the chief councilor. "As you have intimated, the being is a vortex of pure thought en-



*It was unbelievable! A solid building, capable of holding  
all of Earth's population at once!*

ergy. Wise beyond human understanding; powerful beyond human thought. What can we do against such an omnipotence?"

Renolf shook his head. "No, not an omnipotence. I have told you that the alien being is a frightful superpower. A bodiless, intangible vortex of distilled thought, surrounded at will by an impenetrable hemisphere of energy. In short, impregnable to any human weapon.

"But now let me modify this. Instead let me say that the enemy is a decadent being, long past its prime! This is a deduction of my own too vague to clarify. The fact that it consumed matter to feed its alien energies proves it to be not entirely thought energy. It must have some connection to the material universe, however slight.

"Furthermore, after it had so indifferently flung our ship away, as a mammoth might flick away an ant, I returned. What chances I took, I don't know. But I crept, in the midnight of lunar darkness, to the edge of its hemispherical shield. There I made certain tests of that invisible screen.

"It is not actually an impregnable screen. But it would take a force comparable to planetary momentum to pierce it. Yet I believe I have such a force at my disposal! My space ship is run by intra-atomic power! And you men know what intra-atomic power means. I have made tentative calculations. If a thousand tons of sand is instantaneously disintegrated and projected as a beam, that force may not only pierce the alien being's invisible armor, but crush it flat in one stroke!

"And if my deductions are correct—that the being is material in some small way, and that it is decadent, and therefore unwary—we can grind it into the rock of the Moon and utterly destroy it!"

The faces of the ten men eagerly lis-

tening to him were swept with something of stirring hope.

"But it will not be an easy task," went on Renolf. "I have used atomic power, but only in a trifling way. The problem of disintegrating and using the latent atomic energy of a thousand tons of sand is no mean one. In fact, before I could even think of attempting to solve its technicalities, I would have to have the help of perhaps a hundred brains highly competent in science and mechanics."

"We hereby pledge our support," said the chief councilor eagerly. "We will issue any mandates necessary to conscript labor and material—and the specialized men you just asked for—for the project."

Renolf's eyes suddenly glistened strangely. "What I am about to say may shock you more than anything. I said I would need a hundred brains—and that is exactly what I mean. Not men, but their cranial organs!"

HE held up a hand as some of the men half arose in bewildered astonishment. "The secret of my superhuman powers is a secret I cannot give away, even to you whom I have chosen as the most enlightened and trustworthy on this Earth. I can only reveal that my superhuman knowledge—which more than once must have irked your curiosity—is not a natural, birth-endowed lore, but a product of science. I am a laboratory-created superman. And I can be made into an ultra-superman with your coöperation—a hundredfold mind capable, I believe, of offering a chance to destroy the alien enemy at Tycho.

"I leave the decision to you councilors. I shall neither command nor cajole. It is in your hands. I, the Benefactor, promised never again to force myself on human affairs. I will not break that promise now. It is possible, of course, to let the matter drop—to hope that mankind, knowing its doom, may find



a way to vanquish the sinister alien power lying in wait on the Moon. However, I offer here and now to take up the task and finish it in one bold stroke—but I must be given my hundred brains!"

The chief councilor, incapable of being further surprised, spoke quickly: "How much chance is there of your scheme working? Perhaps it would be suicide to strike and fail—the alien power might then arise in wrath and destroy the Earth!"

Renolf shrugged. "I can give you the mechanical chances of success—after I have worked out the problem—but even then I could not figure the chances of fate. No one can tie down the future and say this and this will happen without fail. Be assured that I would not tackle the project at all had I not a great deal of faith in its outcome. But I see indecision in every face, and I can't blame you. If you wish, I shall leave now and let you come to your choice after due deliberation."

The chief councilor nodded. "Yes, that would be best. But do not leave. Step into the next room for only an hour. We have always found quick decisions as worthy as long-fought-out ones." His eyes glowed strangely as he conducted Renolf to the door to the next room.

An hour later Renolf was called in again. The ten councilors stared at him gravely, hopefully, and the chief arose to speak:

"It is the wish of the Supreme Council, here met, that you, known to Earth as the Benefactor, once again give to humanity your magnanimous and inestimable aid. We pledge to further you in your plans to the full extent of our ability!"

Renolf bowed his acknowledgment of their faith and respect. "But the real purpose of the project must be kept secret," he admonished quickly. "I

told my story to you men because I know you to have the expansive type of mind capable of sustaining the shock of the stark truth. But the masses of Earth—they would fall into a panic. The project must be named something else, something Earthly. Perhaps, after we have succeeded—or failed, as there is no absolute assurance of success—the world may be told——"

### XIII.

DORA, her smooth brow furrowed in deep lines that had never been there before, faced her husband. Her eyes were deep pools of wisdom, and her piquant features were drawn into lines of concentration and power. Almost forbidding in aspect, she parted her tightly drawn lips, and spoke: "I am ready!" and her voice was strangely deep.

"Oh, I hate to do this!" cried Vincent. "To subject you to the strain of regulating and controlling the powerful surges of ten brains. And you a woman, the one I love——"

"Vincent, I am ready," intoned the girl calmly. "We have already discussed the matter and come to this decision. With the hundred-brain unit, your thought processes are incredibly rapid, and your patience incredibly short. My wearing the ten-brain headband affords just the medium of contact you need with this work which we are undertaking."

"Of course, you are right," said Vincent. "I worked a month without an intermediary, and it has become impossibly difficult to transmit my ultra-superthought. Now for a test. I shall take a dozen vector equations, run them through at a good speed, and give you the elements of the curve in one-two-three order. You must repeat it within ten seconds!"

Renolf now picked up a leather headband around which were placed six small

receptor boxes. Snugly fitting it to his forehead, he snapped one by one the catch switches. As though some internal upheaval were taking place, his face convulsed and changed till it became a livid picture of powerful thought. A hundred masterful brains pulsed and throbbed in his skull.

Suddenly, with oddly luminous eyes staring at nothing, he ground out through clenched teeth the equations of complicated mathematical vectors—twelve of them. After a moment of thought, he spat out harshly the elements of their combined curve product.

Dora, almost as quickly as he, repeated the result, her voice a blur of speed, for ten seconds was not a long time in which to reel off such an equation. She looked up then.

"It will do," snapped Renolf—the ultra-super-Renolf. "Now I shall be able to work twice as fast with some one to follow me, although I still have to hold myself in check. Come, let's tackle first that tantalum-radium interlacement for the ionic grids."

Renolf stepped to a towering apparatus and tripped a lever which sent leaping power into a bank of giant tubes. Through a double eyepiece he then observed the alternate swing and pivoting of five separate potential dials. Now and then he would bark a series of orders, and Dora at a control board would send flying fingers over buttons and switches.

His orders were not in words, but in technical formulae. Formerly ten men had been needed to carry them out—but never as efficiently as he wished. They had always been in one another's way. Now the girl, working easily and surely, carried out his commands without an instant's delay.

An hour later Renolf snapped off the switches, jerked off his headband, and stood panting and sweating. Dora also removed her headband and they stood facing one another.

"Great!" exploded Vincent. "I accomplished more in that hour than ever before in ten. And it was your idea, you darling genius!"

"Don't give me credit," said Dora. "It was simple enough to figure out. You were wearing yourself down, forging ahead like a Titan, and half your results went for nothing because the technicians thought you were talking in Martian."

"Still I think you're a genius," said Vincent, sweeping her into his arms. "How do you like being a superman—or rather, a superwoman?"

Dora wrinkled her nose in mock distaste. "I could pass it up any time. But I guess I'll never catch up with you. First I had one brain and you ten—now I have ten, and you have a hundred! It's my fate, I guess, to be several brains behind all the time——"

The rest was squeezed out of her by Vincent's bearlike hug. "Come on, let's pass the rest of the evening brainlessly, just for a change. To-morrow—we'll get down to some earnest work."

STILL very much in love, they sauntered for a moment out on the roof of their combined laboratory and home. In the magic wash of moonlight, the brooding Sahara Desert spread all around them. But it was not desert in the immediate vicinity. All around lay the geometrical pattern of a small city—a city built in three months in the heart of the great African desert.

It had been planned and built by Renolf at the time of his dictatorship, as the Benefactor. Only the councilors had known that he wished the Earth to be made safe against invasion from space. It had been his plan to construct powerful defensive armament in the Sahara, and then to spread it all over the Earth. Now it was to be different. It was to be a campaign of offense.

All that the world at large knew of

the secret doings in the Dark Continent was that the Supreme Council had daily conscripted dozens of men and immense quantities of supplies and apparatus and shipped them there. All the rumors afloat—and some of them were wild indeed—fell far short of hitting upon what was really being done.

The two humans on the roof felt a chill as they gazed upon a huge, amber moon which pushed itself above the horizon, despite the tropical heat. It was a lovers' moon, magnificently beautiful in a soft, black sky set with flaming star points. But to them it was a dreadful reminder of impending doom, and the crater Tycho, with its radiating lines—it was like the evil eye, casting a spell on Earth.

"The Spawn of Eternal Thought!" breathed Dora, with a strange catch to her voice. "All this"—she waved her hand to include the buildings around them—"to fight a single being who uses not a stick or stone to protect itself. Oh, Vincent, what if we should fail?"

"We can't! Or we mustn't!" The man's voice was grim. "Even if we must take that last, desperate chance!"

"You mean——"

"I mean have two charges ready. The first, a thousand tons of sand. The second—a million tons! I'm having the projector built to take safely that second charge. But its recoil is going to give the Earth an awful jolt—maybe even throw it off its orbit. That's why I'm hoping the first shot will do the trick."

"But how will you know when and if to shoot the second?"

"One of the ultra-super-Renolf's little brain children. To leave out technicalities, an infinitely sensitive cosmic-ray set will signal—ring a bell—if the first charge bounces off. The first charge will—if it doesn't smash the being's screen flat—at least tend to flatten it a measurable amount. The cosmic-ray unit will tell us if it does. If the being's

screen succumbs, the unit automatically cuts out, and the signal will not ring. Otherwise it will, and four seconds later the million-ton charge will blast up there."

"We're taking an awful chance," said Dora. "I looked over the recoil equation on it. It gives me the creeps. Looks too much like the momentum-velocity product of Earth."

"I know," said Renolf. "But it's the only way. If we try a succession of gradually larger charges, the alien being would skip as quick as that and come at us from behind like a raging lion. Our only little chance is to smash him flat in one swift stroke, before he has a chance to guess what's coming at him. And since I don't know how powerful his screen is, I must use the greatest single force at our disposal, even at the risk of another danger as a result."

"How about the Moon itself?" asked Dora. "Will even the first charge throw it off its orbit? I imagine the second must for sure."

"That I can't say," mused Vincent. "You see, I can't figure the absorption value of the being's screen. It may neutralize, by its tremendous resiliency, a great part of the charge, first or second. But small worry—what happens to the Moon. If only I could cancel part of the recoil here on Earth—that would be a load off my mind."

AND it was the recoil angle of the great project that concerned the Supreme Council more than anything. Renolf made great strides with the projector, but the problem of reaction was not so easy.

"Can't do anything about it," he bluntly told three councilors who had left their manifold duties for a day to visit him in the Sahara. "I worked on it for a week. I have come to the conclusion that it would take a dozen men with thousand-brain units to devise a suitable bracing system, with a force

beam anchored to the Sun. But you can't even have men with thousand-brain units. Their minds would burn out. I myself can wear the hundred-brain head-band only two hours out of twenty-four, else I should go insane. No, Earth will have to take her chances. You, of course, will have to follow my plan and have all coastal cities evacuated at the time of firing."

"What will we tell them?" wailed a councilor. "Millions of people to be moved inland—they will probably riot."

"Tell them sea serpents are rising out of the ocean and heading for attack," said Renolf ironically. The councilors looked shocked and hurt. Then they grinned weakly, forgiving him. A man with the burden he carried could not be expected to be nerveless. Nor always genial.

And Renolf's nerves *were* becoming raw and frayed. Months of hard work, ceaseless experimentation—they took their toll. Yet he refused to slacken up, fearing that the alien being might now and then be in the habit of spying on human activity out of curiosity. It would not do for the enemy to catch them in the midst of their unfinished project.

The Menace had said: "Any instant I may annihilate you." Renolf's only consolation was in knowing that an "instant" to the alien being was perhaps years to Earthly conception.

Dora, despite the superhuman ability given her by the ten-brain unit, was hard put to it to keep astride the demon of swiftness which Renolf was. For two hours each day he would rattle off a steady stream of formulae and test results, as she madly dashed from one experiment to another. Dora was secretary, assistant, and interpreter all in one.

Each day, after their two-hour flurry of activity, they would rearrange their results and pass them out to a huge

staff of technicians and engineers. These men, in turn commanding small armies of help, would turn out material results from the reams of equations. It was the most colossal coöperative system ever organized on Earth. In efficiency it ranked with the smooth working of a termitary, or ant hill. What might have taken industrialized science a century to develop, the city on the Sahara brought to its last stages in less than a year.

Perhaps the Sphinx—had it not been too far north to see—might have cracked its rigid expression of somnolence at the astounding creation which budded from the desert sands. A thing of metal, the projector which was to hurl the unleashed forces of tons of sand molecules Moonward, reared ten miles into the sky. It was as enormous in comparison to anything else man-made, as Renolf was to any of his fellowmen in mentality. It was incredible—like an escalator in a wasp nest, an electric light in a Stone-Age man's cave. It was far beyond anything humanity had ever before erected. Perhaps, taking into account its great purpose, it was above and beyond anything intelligent life had ever before created in the history of the solar system.

IT WAS, in its simplicity, a straight metal cylinder with a polished interior of chromium, its end rearing gauntly into the lower stratosphere from a circular cement base a mile in diameter. It was set rigidly and could point to the Moon—and to Tycho—only at a predestined time.

Then, when the zero moment came, a thousand giant disintegrator tubes would play their fierce radiations on a thousand tons of sand and send an inconceivable beam of force toward the Moon at the speed of light.

It was to be progressive disintegration—the thousand spots affected reacting instantaneously on the whole—as the

spark ignition of a gas cylinder, or the detonation of a charge of explosive. And if the first charge did not crack the alien being's screen, the second would be sent—the macrocosmic energy of a million tons of matter!

Renolf, of course, had had to take into account the relative motions of the Earth and Moon. The beam, at the distance of the Moon, would have an effective area forty miles in diameter—twice the width of the being's screen. The second charge—which could not reach its objective sooner than four seconds after the first—would have the fulcrum of its effective nucleus displaced some fifteen hundred feet, but would still safely include all of the enemy's territory. Basically, it was as simple as that, taking for granted the production of the energy beam. But the meticulous aiming of the beam was a Herculean task in itself.

All scheduled construction was finished a month ahead of the date of firing. Renolf and Dora—and a small staff of technicians—spent most of that month attuning the Cyclopean machine's reflectors. Displaying an ingeniousness that left the scientists gasping, Renolf showed how his key reflector was to aim the beam.

This was not to be done by the long sky-stabbing tube—as a cannon muzzle determines the flight of a shell—for it was merely a shield to protect the Earth from harmful radiations. The actual precise aiming was to be done at the start, with an immense faceted reflector set below the suspended sand charge.

The second and much larger sand charge—distributed in a thousand separate containers circularly between the great disintegrator tubes—was out of range of the rays as long as the first charge was there. But should the automatic cosmic-ray set-up signal back, the ray tubes would again flash for an instant their catalytic energy. And, un-

hindered by the focal obstruction, this time the beams would bore on and simultaneously set off the thousand secondary charges.

Of course, the multiple second charge would completely disintegrate the firing chamber, but only after it had served its purpose. Renolf allowed himself only one second to set the key reflector after the signal. Even then he feared, secretly, that the Spawn might have time to build a greater screen, should the first charge fail. It might be that the Spawn, feeling the shock of the first assault, would instantaneously throw around itself a screen adamant to any known force, or else whisk itself away with lightning speed. Renolf wished he could lash out at the alien being from close—from a space ship. But no space ship could be built to withstand the recoil, or even carry the equipment.

He wished too that he might adapt his fourth-dimensional infinite velocity principle to the beam—that space-time warping form of energy which had given him instant contact with his ten-brain unit, even when he, wearing the receptor headband, had been as far away as Saturn. But that would have taken years of work. It was like trying to extend the muzzle velocity of a rifle to its farthest range.

"WELL," said Renolf the day before the date of firing, sighing heavily, "technically we are assured of success. Actually it is in the hands of fate, for, after all, we are dealing with an almost absolutely unknown problem.

The being may be, as he claims, a vortex of *pure* thought energy. In that case, our beam will simply pass through without effect. Like light going through clear air. But if the Spawn has some slight connection to the material universe as we know it—even if but a skeleton of energy patterns known to our physics—the titanic club of force we

are sending to him will rip him into scattered shreds of radiation.

If the Spawn has a core of material molecules, or a nerve network of static energy, or even a "skin" of confined etheric radiation—he will succumb. If not—if he is composed purely of an alien system of intangible energies—then we cannot touch him!"

#### XIV.

AND on that depended the fate of a great civilization. Not only of Earth's civilization, but of those yet to be born—on Venus, Jupiter and Saturn. Already eight great races of intelligent life had been wiped out ruthlessly by the Spawn of Eternal Thought. Were the remaining four of the solar system to reach that frustrated climax in their evolutionary rise?

The day dawned cold and clear. Late in the afternoon a full Moon leaped above the horizon and climbed steadily into a cloudless sky. Millions of eyes all over the Earth looked at it casually, little knowing that it held a great secret of potential doom, for the Council's campaign of secrecy had kept the truth from the masses.

Millions had been moved from all seaboard over the entire world. Millions had refused to leave their homes, scoffing that a mysterious tidal wave was to sweep over all the oceans. The Council had cajoled and threatened, but had finally left them unmolested, for there was not time enough to begin a forcible evacuation of all cities within a hundred miles of ocean seaboard. It was plain that Earth was to pay for her freedom from the alien menace with many unfortunate lives.

The city on the Sahara was completely deserted. The Gargantuan projector was unattended by a single human soul. Five hundred miles away, in a secret establishment on the Nile, Renolf and Dora stood before the master control

board. Dozens of high officials were in the other rooms of the building.

Two hours before the moment of firing, Renolf donned his complex headband, giving him the lightning perceptions and mental activity of a hundred brains. At the same time Dora snapped the catch switches of her ten-brain unit. Then Renolf began a careful résumé of what their task would be. To Dora was allotted the dozen controls which would keep the giant dynamos feeding their tremendous power to the disintegrator tubes as they warmed up. Renolf himself would handle the three master dials which controlled the key reflector and its elaborate system of lenses.

The room they were in had but one window through which they could see the tropical Moon climbing to zenith. But they would not have time to look at the Moon at the last minute. Dozens of ingenious instruments—far more accurate than human vision—would be their eyes.

RENOLF finished repeating his instructions for the third time. It was but five minutes before the great moment. Dora looked at him searchingly. His face, beneath its superimposed look of cosmic wisdom, showed haggard and uneasy. The steady, superhuman work had sapped his strength.

The man stared back, breathing heavily. Something flashed between them. Not the undersanding of two superminds—two multiple brains. But the subtle affinity of two souls mated eternally. Then, as one, they took a last look upon the undimmed tropical Moon, now almost in position overhead.

How beautiful it was; how innocent-looking in its virgin whiteness! Yet there at Tycho, in the center of radiating white lines, crouched an ageless menace, waiting like a beast of prey. Waiting as an eagle might for the first

tremulous flight of a dove, so that it could devour it before it became strong and swift. Those other civilizations—those of ravaged Titan and Ganymede and Mercury—they had been destroyed before they had reached full maturity. This was to be their avengement—by a sister race of the same Sun.

Renolf turned suddenly from the window and watched the chronometer, whose subdued tickings marked the passing of sidereal seconds, with an error no greater than a millionth of one second unit. When it lacked but three minutes of the time, he waved a hand. Dora promptly manipulated her controls. Dial needles quivered and crept swiftly along numbered scales. Five hundred miles away a thousand ionic grids were surging with increasing power.

A minute later Renolf touched his hands to two of the three dials before him, twisting them slowly. At the same time he watched intently the readings of a dozen indicators above. A miraculous pulsing quantum of fourth-dimensional energy was probing the sky, finding the exact edge of the Moon. A secondary pencil of superswift radiation—like a mechanical draftsman—was marking the precise center of the orb above. Renolf depended on these errorless robots to guide him in setting his reflector system squarely on Tycho.

The chronometer gave out a soft bell note. Sixty seconds to go! Thereafter, the two humans reacted to each swinging needle and shifting reading as though they were the pulse beats of their own hearts.

For a panic-stricken moment Dora felt a sense of inadequacy—felt a sinking inability to keep the giant power at her finger tips from running away with her—blasting out of control and leaving a vast pit on the desert floor. Then she drew on the reserves of her superhuman contact, and steadily applied the enor-

mous currents to the great atom-splitting tubes. She had no time to look at her coworker.

If she had, she might have been appalled. His face a livid battlefield of concentration and power, he was setting his reflectors with delicate precision. Beneath his intense purposefulness was a strange look of apprehension.

Ten seconds! Nine—eight—Dora turned a dial with bated breath. Seven—six—Renolf twisted a vernier carefully. Five—four—three—they looked at one another soundlessly for a split second; all was ready—two—one—

The world felt a shock. All over the Earth, people stared at one another in sudden fear. An Earthquake—thought many. Those who had experienced the temblors of Earthquakes before knew it was something more. Earthquakes were a trembling of the ground underneath; this was a sudden, tingling blow, as though the whole Earth had leaped ahead! In inhabited parts of Africa and southern Europe, many persons were thrown off their feet.

INSIDE the remote control room on the Nile, Renolf and Dora paid no attention to the shock attendant to the automatic firing of the charge. Their whole mind was bound up in their instruments.

Something less than four seconds after the first thousand-ton charge had blasted its fury heavenward in an invisible beam, a tiny bell clinked sharply. Renolf, who had been twisting his dials during those seconds for a new setting of the key reflector, immediately set his vernier ten points further. The first charge had failed to crush the being's screen! Renolf's soundless curse was drowned out in a blast of sound that seemed to come from everywhere.

At the note of the bell, Dora had paled. Yet her hands had jabbed quickly at a dial, stepping up the system to full power. Then a giant hand seemed to



pick her off the floor and throw her against the wall. All went black before her eyes.

When consciousness came to her, she thrilled to find herself in Renolf's strong arms. He clutched her to him with a fierce exultation.

"Are you all right, dearest?" he asked anxiously.

"Yes——"

Renolf then set her on her feet. She noticed his headband was off. Something felt strange to her, and she reached a hand to her head to feel her own headband missing. She saw it on the floor at her feet. The chronometer showed her that it was five minutes since the charges had been set off.

"Vince! The result——"

"Perfect!" cried the man. "The second charge did the trick! The Spawn of Eternal Thought is no more! I know because the two aligning beams of super-radiation back-fired with something that blew out the whole works back here. Only one thing could have done it—the collapse, or implosion, of the being's screen, sending out a wide vortex of reaction waves of the fourth-dimensional order.

"It is absolute, scientific proof that the beam we sent up there to Tycho knocked something all to hell, like a meteor splashing into a lake and drenching an observer a mile from the shore. We've done it! We've done it!"

Renolf skipped around the room in an abandon of relief and joy.

"But Vince! What about the recoil—what about Earth? How did that turn out?"

Vincent sobered suddenly. "Not as bad as I thought. I mean that although the recoil was enough to shake us off our regular orbit, the Earth staggered through with flying colors."

"How can you know that already?"

asked Dora dubiously at the same time staring out the window to see if perhaps there were some indication that the Earth was plunging into the Sun, unloosed from its age-old orbit.

"I don't know, of course," returned Vincent. "But the super-Renolf does. In those few minutes after the shock he figured tentatively from the reaction gauges there that the recoil had failed by just a little to jolt the world into a dangerous position.

"As it is, however, the Earth is taking up a new orbit. In a few days it will be more than a million miles nearer to the Sun, and its period of rotation and revolution have been increased some tenth of one per cent. But that is nothing serious—not compared to the doom we have taken away from our future."

He sobered still more. "And, of course, the jolt has been great enough to do much damage. This place, built especially on bedrock and of superstrong materials, withstood the shock as I planned it should. But elsewhere people have not been so fortunate. In all the big cities, many buildings have probably collapsed. Thousands have been killed by falling things. And in a few hours a terrible series of tidal waves and storms will sweep over all coasts.

"The next few hours will be hours of suffering and terror. All the millions who know nothing of all this will think the Earth is coming to an end. There will be fire and madness and pain and great fear——"

Dora touched the man's arm. "You are the Benefactor again, Vincent, worrying over your people. But they will understand when they hear the truth. They will know that the Benefactor has saved their posterity from a hideous menace. My father—you will insist he be credited above you, I know. But they will honor you, forever, Vincent, for what you have done."

*The End.*

# Let's Get Down to BRASS TACKS



AN OPEN FORUM of CONTROVERSIAL OPINION

## Three Classics Only?

Dear Editor:

Some months ago I promised you a letter of unqualified praise. Much as I would like to live up to that, I find that a few of your good points have been lost in the interval. Nevertheless, you are still at the top of the profession. Of course, this refers to your stories, since I do not buy the magazine for the pictures, letters, or advertisements.

As for the stories, only three A+ ones have ever been printed. They are *The Skylark of Space*, the *Fifth-Dimensional Catapult* and *The Fourth-Dimensional Demonstrator*. This man Leinster seems a worthy successor to the much-lamented Thorne Smith. In the past four months you have received five A ratings, and one each of C, C- and D. The rest, including the entire February edition, were about average. The D was awarded to *Forbidden Light* which must have been put in the wrong magazine by accident.

It is with the deepest regret that I learned of the passing of Mr. Weinbaum. He was probably the best author you have ever had, and was responsible for three of the A's mentioned above.

It may seem a minor matter, but is it really necessary to put an exclamation point after each caption in *Brass Tacks*? It would probably be appreciated if you printed the answers to some of the questions asked. The rest of us would like to know, too.

Congratulations on a year well started.—Alan Beerbower, 943 John Jay Hall, Columbia University, New York City.

## Isn't This Issue Even Better?

Dear Editor:

After finishing the March issue of *Astonishing* I lay it down with a feeling of satisfaction—and regret. The feeling of regret was naturally caused because there was nothing more I could read. It was, in my estimation, an exceedingly good issue. If all the future issues of *Astonishing* measure up to the March issue our magazine will be practically perfect.

Stanley Weinbaum's death, I am sure, has given science-fiction as a whole a severe and painful shock from which it will never quite recover. From his gifted pen arose characters who will live forever in the hearts of every true science-fiction fan.

All of the stories were good, but the two I thought most outstanding were *Entropy* and *Redemption Cairn*. The superb characterization in both stories made the characters fairly live. Fine work Mr. Schachner! Keep it up!

It will be impossible for me to make any comment on the serial. I'm one of those people who waits until he has all the installments before he starts reading. I find it saves the nerves!—P. L. Lewis, 232½ N. Everett St., Glendale, California.

## I Appreciate This Coöperation.

Dear Editor:

Just got the new February number and what a surprise! Trimmed edges! Must I say that this is the biggest thing since you gave us *Ancestral Voices*? Gosh, editor, you really deserve a big hand for this attempt. We know that it is costing you more but we are sticking and gaining more readers for you. During the last four months I have found thirty new readers for *Astonishing* and am still trying to find more. I wonder what those new readers will say when they find out that the magazine has changed to a new face?

You have brought Wesso back. We are glad and we welcome him, thanks to you. But here is hoping that Dold will be back in a short time. We will be missing him. Please try Clay Ferguson, Jr., on your pages. I know he has something.

We are patiently waiting for a quarterly.—J. R. Ayco, 510 A. Mabini, Manila, Philippines.

## Lovecraft Again.

Editor, *Astonishing* Stories:

It was Lovecraft's name on the February issue which brought your magazine to my attention. As I make it a practice never to start a

serial until I have all the parts I cannot pass judgment on this story yet.

I liked F. B. Long, Jr.'s *Cones* and Miller's *The Shapes* in the February issue. In the current issue, Weinbaum's interplanetary adventure *Redemption Cairn* is tops.

Even if every story isn't a winner, *Astounding* is the best-printed and illustrated science-fiction magazine on the news stand.

I also noticed that *Astounding* has heeded the cries of the readers and given us the straight edges all magazines worth saving should have.—Harold F. Bensom, 56 Harris Ave., West Warwick, Rhode Island.

### Pointed Comments.

Dear Editor:

The trimmed edges make a fine improvement in both appearance and facility of handling. Our magazine is now a hundred steps ahead of any other magazine in the field. I suppose that, with the increased popularity that will inevitably befall *Astounding Stories*, other much-asked-for improvements will gradually make their appearance. I'm not kickin', though. Now that the other science-fiction magazines have gone bimonthly, I'll vote for the semi-monthly *Astounding*.

Schneeman has improved his style greatly, but still is at the bottom of the list of illustrators. One can always tell which story is the poorest in the issue—the editor given it to Schneeman to illustrate!—Willis Conover, Jr., 280 Shepard Ave., Kenmore, New York.

### "Our Rocket."

Dear Editor:

Congratulations! You have done it! *Our rocket* is rocketing up toward the zenith of zeniths—perfection! I have read the science-fiction type of magazine for years and can safely say that your magazine is undoubtedly a phenomena among all magazines—in this field and all others. At the present, *Astounding Stories* is far superior to what it was back in 1932. You have indeed done a fine piece of work! Now the smooth edges are to *Astounding Stories* the same as a coat of varnish to a masterpiece.

But don't get a swelled head—you have your faults, too. Though they are not numerous, they exist. The most prominent is the lack of editorial notes in *Brass Tacks* and the lack of some science-discussion page.

When a reader writes a letter to the editor of a magazine, through the readers-discussion page, he naturally expects some answer, hence editorial notes.

I have noticed some cranks trying to actually kill the magazine by demanding that it become a bimonthly. I should think they would want it issued semi-monthly, or even more often than that.

Now, with your kind permission, let me state some views concerning what I call—science. Here goes! What has a beginning must have an end, for example: A line. No matter how far extended, it must come to an end, for it has a beginning. The only exception to this rule is an oval or circle. The oval and circle offer a microbe a journey which would end only after the creature's death. Now for space: I send out a ray of light which can penetrate any substance without even losing its intensity. This ray will travel at a rate faster than light. The ray has a beginning; it therefore must have an end. Its end will be the end of space. Therefore, space is not infinite, merely finite.

If space is finite, then it must take the form of—let us say—a soap bubble, but perfectly formed. The planets and systems are mites of dust floating in it. What is outside of our bubble space? Undoubtedly another space bubble. Assuming that each atom in our system is

a small solar system, then there must be atoms in that system and so on down the line. These systems must, in some way or other, form a cycle—for is not the only infinite figure in a circular form? That is, if I were to shrink from our system into the next smaller—and so on down the line—eventually I would wind up back in our own system. Therefore, I could continue infinitely as long as I lived, repeating this process. Therefore, the system of these systems must form a cycle. Therefore, the clearest thought would be of a set of gears representing the systems arranged so that they get larger and larger as they go along, until they reach a point where they begin to decline again, until they are so small as to be equal to the gears at the beginning. They have formed the cycle.

Or think of a string of beads—the type which get larger as they go along the string, until they reach their maximum size, and then decline until they are back to the smallest size again, around the throat of one of the fairer sex they form an oval. But what is outside of our cycle? Another cycle perhaps. If not, then what? Therefore, isn't that good old-time religion much more substantial by far?

Now that that is off my chest, let me offer you my best wishes for the future success of *Astounding Stories*.—Herbert J. Rosenthal, 158 Van Buren St., Brooklyn, New York.

### A Dimensional Discussion.

Dear Editor:

I have been a reader of the various science-fiction magazines ever since they came out and I am afraid I am a pessimist as far as most unproved theories are concerned.

Take the fourth dimension. Can we conceive of any such dimension? Take a cube, for instance, and extend every side of it to infinity and we would still have three dimensions.

We are given a lot of bunk about beings in the fourth dimension being able to penetrate any solid bulk in the third. The example being given of a box, etc., where a being of the third dimension can penetrate the second.

Does a being in the third penetrate the second? For example: Take a sheet of tin and let a being in the third pass his hand through this sheet of tin and reach to an object beneath it. It cannot be done. The second dimension has no thickness—absolutely none. This means that the being in the third does not penetrate the second but merely comes in contact with it.

Can there be beings in the fourth dimension who are able to pass to the third and not be harmed? If it were possible to have any being in the fourth dimension, it would consist of four dimensions. First, second, third, and fourth. The third dimension of the supposed fourth-dimensional being would be visible to all of us. The fourth dimension would however be beyond infinity, as the third dimension extends to infinity for all of us.

How many points can there be in a straight line? The answer is infinity. How many lines in a plane. Infinity. The number of planes in a cube is likewise infinity. By the same line of reasoning we would have an infinite number of solids in the fourth-dimensional object. This puts the fourth dimension entirely out of range and comprehension of a three-dimensional being.

Again, could there be a two-dimensional being? For those in the third dimension, no two-dimensional being could exist. A plane does not exist as such but is a mathematical conception. No one has ever been able to make a plane. You say that the surface of an object is a plane, but you cannot produce a plane alone since it hasn't any thickness and contains nothing.

I do believe that both Campbell and Smith are on the right track and that some of the ideas advanced by them will be realized by future generations. Most of us have studied along certain advanced lines. We haven't the money to carry on the research and experimentation necessary to reach definite conclusions regarding these theories. If we were to advance

any of them as facts we would be laughed at. The only safety valve we have is to write a fiction story embodying some of our theories.

Wells advanced the poison gas in one of his stories and the Germans were the only ones who were smart enough to take advantage of the idea. We have inventions in common use to-day about which if any one advanced the theory of possibility one hundred years ago, he would have been locked up as dangerous. I could write pages along this line.

One of the oddest that I have run across in recent years is a party in Italy who claims that by pressure of certain glands in the neck the subject can see through solid walls and tell what is going on on the other side.

I am from Missouri, but I was sufficiently interested to get in touch with him and learn the particulars of his experiments. He advised that he had subjects who had looked the Moon and Mars over and had drawn pictures of animal and vegetable life on both. Some of the European film companies are going to make films showing his results.

I wish you every success in your publication to which I am a regular subscriber.—T. A. Hunter, 10 Stone St., Yonkers, New York.

### The Music Goes Round—

Dear Editor:

He pressed the old keys down and out came *Mathematica*; or maybe he simply put 2 and 2 together. Some story! Darn it if it doesn't beat Aladdin. You don't even have to rub a lamp. What does *Pearl* mean by an indivisible sum? Could it be our old pal of high school days?  $\sqrt{-1}$ . Try to solve that one.

At the *Mountains of Madness* is one keen yarn. Let's hope it keeps it up. That first illustration rather gave one the feeling that the mountains were on an entirely different plane than the figures—rather a different set of dimensions as it were.

*Death Cloud* has an old theme but is very well written. It's good reading but a bit like the happy-ever-after ending of a fairy tale.

The rest rather lagged behind but they helped to maintain my balance.

Now a suggestion to your fans who save your magazine for hiding. I find that the magazines look better when bound if the edges are cut just enough to do away with roughness. That is the issue previous to the February issue—let's hope all future issues are trimmed.—Lyle Dahlbrun, 601 Benton Ave., Rock Rapids, Iowa.

### Another Job?

Dear Editor:

The first thing I turned to when I picked up the March issue of *Astounding Stories* was the Editor's Page and so it was with deep regret that I learned of Stanley Weinbaum's death. It is one of the hardest blows dealt to science-fiction.

The next paragraph cheered me up a bit for I am anxiously awaiting Wellman's return and the new serial by Eando Binder, scheduled for next month. Now that you have trimmed the edges and got Wesso back, there is very little left about *Astounding* to improve—for you've done a fine job; but there is one thing that is lacking—that is, a companion magazine to *Astounding*.

Fantasy-fiction not only takes in science-fiction but weird-fiction as well. So how about reviving *Strange Tales*? I am sure that you would receive every reader's support that you have gained in putting *Astounding Stories* across. What do you say? It is up to you to put this question of revival before your readers in the form of ballot or otherwise.

The cover for March is an excellent example of Brown's unsurpassable and superlative work.—Seymour Dickman, 3425 Knox Place, Bronx, New York.

### Are Edges O. K.?

Dear Editor:

Your edition of the February *Astounding Stories* was the worst issue I've contacted in about two years of perusing your science-fiction.

What's the matter with our good authors: Weinbaum, Schachner, and a few others? Where are they? Where are those nice long novels full of science, adventure, and romance? Why can't we crowd all three into the fiction? I must praise you on the cut edges. It's really a pleasure to handle them.—Seymour Schwartz, Bronx, New York City.

### Still Improving.

Dear Editor:

The March number shows great improvement over the February issue. At the *Mountains of Madness* was superb. Don't let Lovecraft get away. *Entropy* started off with a bang, but the end seemed rather insipid. The theory that matter, as we know it, ceases to exist when absolute zero is reached is a little far fetched.

The shorts were all fine except *A Little Green Stone*. The only decent story by Haggard that you ever printed was *Human Machines*.

The cover was fine. It looks much better with the unnecessary wording off. June, August, and December, 1934; February, August, and November, 1935; February and March, 1936, are the finest covers you have had.

The appearance of the magazine has greatly improved since you gave us trimmed edges. With an editorial reply after each Brass Tack, a scientific editorial, and an author's page, *Astounding* should be perfect.—Sydney Slanick, 199 Callender St., Dorchester, Massachusetts.

### Aren't We Constructive?

Dear Editor:

I have been a regular reader of *Astounding Stories* ever since it was first published and I consider it a wonderful stimulant to thinking.

But why do all the authors for *Astounding* picture all the other planets as being inferior to Earth? Why is it they consider Earth the most perfect of all the millions of whirling worlds. Even ants have a higher organized system of society than humanity. I feel sure that my old friend Nat Schachner and Starzl as well as many other authors of *Astounding* realize the deplorable conditions of society on Earth as it now exists in comparison to what it should be and could be if we should unite for a better world.

May I suggest that we have a few stories like Edward Bellamy's *Looking Backward* and *Equality*, staged on Mars or Venus or any other planet? It's increased constructive thinking that we need and *Astounding Stories* may as well carry some constructive economic stories along with its fiction of exaggerated science-fiction.—J. L. Stark, Tyler Hotel, Louisville, Kentucky.

### I'm Not Fond of War Themes, Are You?

Dear Editor:

This letter is not a threat, but a plea. Please won't you see if you can't persuade Don Stuart to write a sequel to *Rebellion*? For instance, couldn't the Tharoo, with the aid of the science the Earth Tharoo brought to Venus and with the strength and determination the Tharoo that landed at Venus must have developed in fighting the heavy jungle, return to reconquer the Earth? Then couldn't Mr. Stuart portray a titanic space war, ending by having the Tharoo

entirely exterminated? Of course, these are only samples of what might happen, but again, please try to see Mr. Stuart about said sequel.  
—Leonard Bailey, 1404 S. Kenilworth Ave., Berwyn, Illinois.

### In the June Issue:

My dear Mr. Tremaine:

All congratulations on the publication of H. P. Lovecraft's *At the Mountains of Madness*, one of the finest novels it has been my pleasure to read, irrespective of its excellence as an Astounding story. Don Wandrei tells me that Astounding Stories has another of H. P. Lovecraft's coming up; publication of Lovecraft's work is a signal step in the increasing excellence of the magazine.—August W. Derleth, Sank City, Wisconsin.

### A Veteran Speaks.

Dear Editor:

The Astounding Stories for February is sure the top! The cover is a marvelous piece of work, per usual, and the interior decorations are O. K.

I enjoyed all the stories, particularly *Mathematica*, *The Shapes*, and *Blue Magic*.

The featured serial *At the Mountains of Madness*, by H. P. Lovecraft, is certainly a spell-binder and I do not intend to miss any of the installments. I believe it is one of the most fascinating stories that I have read, because of the realistic style of writing.

I have been a science-fiction fan for about ten years, and I believe your magazine has reached an excellence in quality unequalled by the larger science-fiction magazine of predepression days, and, of course, leads the field today. How about a nice, big, Astounding Stories Annual?

The clipped pages are much appreciated.—Gene Pigg, 1909 N. 48th St., Seattle, Washington.

### "Mathematica Plus" Is Here.

Dear Editor:

I have read your magazine ever since it was first published. The stories are fantastic, and seem real and well-written, even though some of the stories contradict each other. I have never written you before and hope to see this in print. As I am a believer in science, I like your magazine and delight in reading all the things that the stories seem to make real. I can't see why some of the things can't be worked out and brought into being, although some of it is very diabolic and life-defying.

My perspective to all the stories in your magazine is far-reaching, like thought itself in its mathematical equations and solutions. I could rave on but I don't wish to bore you with mere words. The thoughts brought on by your writers are nonestimable, and words cannot express that of which an imaginative mind is capable.

Will you kindly inform John Russell Fearn, author of *Mathematica* that I wish him to finish his story? How in the world did he get back to earth to write his story; that's what I wish to know. I speak of him as the one in the story, his character, you know. A very good story, but not finished.

I also wish to comment on the trimmed edges of your magazine now. Very, very good and a great step to improve your magazine and bring new readers who can only be told about rough edges on the old issues and do not have to suffer now. Enough said, and here's to a very good year and good stories.—Norman Haynes 1314 E. 6th St., Sioux Falls, South Dakota.

### A Step at a Time, Please.

Dear Editor:

This letter is later than I expected it to be, but anyway here it is. You know, I almost wore the edges rough again, dipping them back and forth the first day I got the magazine. The six-year campaign for trimmed edges on Astounding is over. Thanks a million! The campaign for large size continues.

Ordinarily, I have read the installments of the serials as they come. However, I have always read Lovecraft's stories complete in the past so, this time, I'm waiting for all three parts before I read the story.

*Mathematica* was a great tale. I have always enjoyed most of Fearn's stories. Well illustrated by Marchioni. Frank Belknap Long, Jr., is improving as is shown in his latest story *Come*. *Death Cloud* was good, although it could have contained more science. The shorts on the whole were quite good.

Brown's cover was fair. I don't think it will help our news stand circulation any—doesn't stand for enough. That little box again! I do not like Brown's inside work! Wesso, of course, is good! Schneeman is improving. Please get Paul.

Now that you have trimmed edges, how about doing away with the margins around the illustrations? And better-looking lettering for the story titles?

Yes. The next step is large size, twice as much reading matter per page, 96 pages. And then Astounding Stories quarterly—twice as big as the monthly, containing book-length novels, novelettes, and shorts. All stories complete, of course. These two steps would give the reader as much, or more, reading matter than a twice monthly at the present size. How about it?—Jack Darrow, 4224 N. Sawyer Ave., Chicago, Illinois.

### Good Authors Are Not Always Good Scientists.

Dear Editor:

Astounding Stories is allegedly a science-fiction magazine; will you stop handing your unfortunate readers drivel? A good science-fiction story should contain good penmanship and good science! The majority of your stories contain neither. If your illiterate thrill-seeking readers want stories of a weird or fantastic nature, start a new magazine—but keep that junk out of Astounding Stories!

I quote L. C. Rome: "What do we care if the story is scientifically wrong if it is good reading?" (Brass Tacks, Jan., '36). My dear Mr. Rome, did you ever stop to consider that this magazine is a science-fiction magazine and that all stories, even though they contain the minutest fraction of science, should not be scientifically inaccurate? My favorite new author is Stanley G. Weinbaum. Though half of his stories contain no science, he is definitely a science-fiction author, because those of his stories that do have science in them are reasonably accurate, and most important of all, his stories are well-written. Compare them with other authors who write about similar episodes—for instance: C. B. Kruse—a rotten author whose science is nonexistent; J. H. Haggard, same as Kruse; Raymond Z. Gallun, not as good as Weinbaum.

There seems to be a multiplicity of tales of the spaceways. Cut 'em down a bit and dish out an original plot once in a while. I don't mean the so-called fantasies such as Miss Moore turns out. They are nothing but dressed-up fairy tales.

Keep Doid and Saaty on the human figures. Marchioni does the best machinery. All of them, but Schneeman and Saaty have too-heavy lines, too-dark pictures. I don't like to see a picture a dark blur of ink.

I was surprised and pleased with the clipped edges. They are easier to turn, better-looking, and better for filing than the rough edges were. It represents a great step ahead.

As a final, closing suggestion, print comments at the end of all the letters and have a short, one-page science editorial. Those two points and the ones mentioned above are the only respects in which you have room for improvement.—Hayward S. Kirby, Griswold Road, Rye, New York.

### Spirit Creates Effort to Advancement.

Dear Editor:

Here goes for my annual attempt at letter writing. First, let's get the flowers out of the way.

Astounding Stories has shown a decided improvement during the last year. I believe that it compares very favorably not only with contemporary magazines, but with any science-fiction magazine, past or present. However, it is not this that I admire as much as the constant effort at advancement, and the splendid spirit shown by the readers. In this, I maintain that Astounding Stories stands alone.

Also, permit me to give three lusty cheers for the trimmed edges, for which I have rooted a long time. I get as much enjoyment out of Brass Tacks as I do out of any of the stories. Don't curb it in any way, especially the humor. And congratulations for printing some of the most sarcastic letters it has ever been my privilege to read. You're certainly fair about things.

And now, please permit me to make a few suggestions. Please don't build your stories around facts, as some letters have suggested. Let the authors have a free rein. And how about acknowledging the story from which the cover illustration is taken. I confess that I have been unable to connect some cover illustrations with any story in the issue. But don't consider me against illustrations. I'd like more of them; they add to my enjoyment of the story.

How about getting Neil R. Jones on your staff of writers, and Doc Keller? I have always admired their work. So, in conclusion, more power to you, and may our magazine make as much progress in 1936 as it did in 1935.—Friedrick Woerner, 1614 Summerdale Ave., Chicago, Illinois.

### An Order in Full.

Dear Editor:

Well, well, well! Astounding scores again! This time smooth edges! What next? Paul, perhaps, or a story by Merritt. Much as I hate to remind you, editor, Astounding is due for some more by Leinster, Williamson, Bates, Stuart, Talne, and Kelly. However, that's your job not mine.

Wesso is fine. So is Schneeman. The cover was good but spoiled by the red rectangle and writing. I am glad to see that you have removed "The Best in Science-fiction," or something like that.

Now for the stories in February: I have finished *Blue Magic* and don't know what to say. It begins well and has its points but I don't consider it worthy of Astounding. Somehow it failed to grip. Come again, Diffin!

The plot of *Death Cloud* fairly smelled with age. Still, it was very well-written and an immense improvement on Daniels' *Way of the Earth* a few months back. Fearn's *Mathematica* is the best since *The Man Who Stopped the Dust* and *Before Earth Came*.

Cones was quite good, but I'd advise Long to return to his old style of writing. Gallun's short was good, obviously a sequel to *McGoo* in May, 1935. Astounding. *The Seeing Blindness* was too much like *The Man with the Four-Dimensional Eyes*, by Edmund Hamilton, published in November, 1935 in another magazine.

I am looking forward to reading Lovecraft's

new one and wonder when you will have him write the next serial. Greedy! On the whole, the February issue wasn't up to scratch, I think, but we're not all perfect.

One reader is natty. I refer thus rudely to Mr. Robert L. Harder, Jr., of Berwick, Pennsylvania, Junior! My goah, I should say so! Say, are you cracked? What do you mean—lightning strikes upward? Rain will be falling upward next. Good Lord!

Thank you for answering my letter, editor. I hope that you will print this one because my call for American and any other correspondents so far has remained unanswered. Shocking! I will answer all letters from anybody anywhere. Yes, and to tempt you, I'll put a stamp on my letter. How's that?

I'm sure, editor, you're fond of me, and, believe me, I look upon you as a father. Now, how about J. George Frederick, John W. Campbell, Jr., Robert Evans Howard, Otis Adelbert Kline, Arthur Merritt, David H. Keller, Eando Binder, James Montague, Anthony Gilmore, Ray Cummings, Captain S. P. Meek, Edmund Hamilton, Victor Rousseau, Arthur William Bernal, and drawings by Paul? And how about a science-fiction comic strip and a quarterly? For your repeated efforts, editor, you deserve something good! What shall it be?—Francis L. Ellissen, 6 Cardigan Road, Richmond, Surrey, England.

### A Short-Short Story.

Dear Editor:

Here is a short story for Brass Tacks. Bill Brooks lived in our town. Bill was a strange man. He liked stories of the most crazy nature. Impossible things—traveling between the planets, going back in time, other worlds, strange people on them. Such trash, the people said! But Bill was a good mechanic—a positive wizard with machinery. The trouble was with the people, not with Bill. For Bill had brains. His mind was not in a rut.

One day I met Bill. We got to talking. He explained various things. He told me about some of his experiments. I learned more from Bill in ten minutes than I would in a year from the rest of the town.

A whole new world was opened to me. I fairly ate up everything in science-fiction. I became acquainted with and read stories by such men as Smith, Binder, Fearn, Long, and Talne. I became interested in everything pertaining to science. I got out of my rut. I thought again. I hope there are other Bills with keen minds and imagination enough to look ahead. The world needs them.

And now for Astounding Stories: I like it. I look forward to its appearance every month. I have renewed my subscription. That should be enough. To Stanley G. Weinbaum, auf wiedersehen, friend.—Walter L. Reeves, Sharon, Massachusetts.

### Containing a New Suggestion.

Dear Editor:

Here are a few suggestions! I hope you'll pardon us readers for always asking for more, but it's quite necessary. Dissatisfaction is the driving urge of the universe and is the only thing that will either keep the magazine at its present standard or drive it ahead to "greater glories." Satisfaction is dry rot, and should come only when senility is reached.

1. Include a special cut, on the contents page or elsewhere, giving a few of the stories coming next month.

2. If wording must be printed on the cover, please do not have it in a huge red square which smothers half the picture.

3. If possible, devote a few pages each month



to a biographical sketch and a picture of a favorite author.

4. A little contest now and then would be appreciated.

5. Wesso is by far your best artist. The more I see of him, the better I like him.

You have given us a magazine with smooth edges, fairly good paper and readable print, full of the best works of the best authors in the field. You have brought the master of science-fiction illustration, Wesso, back to the fold after an absence of almost three years. I don't want you to think I'm not being thankful, so I'll apologize again for this bit of criticism.

Here are a few more opinions in more or less condensed form: I am perhaps a bit late in commenting on the December issue, but better late than never. The issue contained at once one of the best and one of the worst stories that I have ever read. Raymond Gallun did a wonderful job in writing *Davey Jones' Ambassador*. It had the most hackneyed start imaginable, then proceeded to become quite as fascinating, and in the same way as the unforgettable *Old Faithful*. Give us more of Gallun!

But here's the other extreme! Whatever made you accept *Forbidden Light*? It was one of the most disgusting of improbabilities, disappointments and idiotic coincidences I have ever struggled through. All of its science was incorrect, and, as an adventure tale, I can find a more plausible one in the adventures of the "Three Little Pigs" and the "Big Bad Wolf."

*Smothered Seas* in the January issue was delightful. A plausible new idea is always welcome when coupled with a well-written and reasonable sequence of events. *The Isotope Men* was not quite up to Schachner's standard. I haven't read the others yet.

Seeing Lovecraft in the February issue caused me to excavate the September, 1927, issue of the first science-fiction magazine from my files and to read *The Color Out Of Space* over again for the 4th time. I have never seen a more beautifully written story in a science-fiction magazine than that was. I am eagerly awaiting the rest of his latest story so that I can read it in continuity. I read *The Death Cloud* and *The Seeing Blindness* first in this issue because they were illustrated by Wesso.—Oliver E. Saati, 1427 Logan Ave., North, Minneapolis, Minnesota.

## A Scientific Basis!

Dear Editor:

I have been reading *Astounding Stories* for one year, from March, 1935, to March, 1936, and it's the best magazine I've ever been interested in.

I am of a very scientific nature, having my own laboratory, and it seemed that when the day's work was done, there wasn't any kind of fiction I could get interested in. Then one day in March I happened to be passing a news stand and, lo and behold, there was *Astounding Stories*, with an extract of *Proxima Centauri* on the cover. I told myself that that looked like the inside of a rocket and should be good. And I have had one year of good stories.

One thing that cuts me up is the way every one slams every one else and the editor in Brass Tacks. If they don't like it, why do they read it? It isn't easy to satisfy a couple of thousand mentalities, and they should know it.

I read *Astounding* for the scientific basis of the stories. Some one else reads it for the weird stories you publish like *Buried Moon*. Even so, they have a scientific basis. I like stories of the thought-variant type such as *Entropy*, *Strange City*, *At the Mountains of Madness*, *Proxima Centauri*, *Mathematica*, *The Isotope Men*, and *Mind of the World*.

All of these have scientific bases many of which are not possible now, but may be some time in the near future.

To some people the very stories I praise may be hackneyed, etc., but I say, carry on, *Astounding*!—T. B. Yerke, 6818 Templeton St., Huntington Park, California.

## Opposed to Adventure.

Dear Editor:

Congratulations on the splendid February number. All the stories were fine, although I thought *Cones* was spoiled by the poor ending. If the rest of *At the Mountains of Madness* is as good as the first part, it will be a winner.

I should like to remind Mr. McKernan that *Astounding Stories* is science-fiction. If it is adventure, mystery, or romance that he wants, surely there are dozens of other magazines to supply his needs. Why, there must be over a hundred adventure stories published for every one of science-fiction. Do not grudge us science-fiction fans the few magazines that cater to us.

*Astounding Stories* is equal to all the other science-fiction magazines put together, both as regards the number of stories, which is not so important, and the quality of them, which certainly is.

So, please don't try to get science-fiction as it was several years ago—just a lot of wild-west stuff under the guise of science-fiction. Let us have as much science—accurate, of course—as we can possibly get in, and also, since chemistry is my hobby, as many stories dealing with chemical experiments as possible.

May I add my plea for editorial comments in Brass Tacks? It is the one thing needed to make *Astounding Stories* perfect.—Cecile Phaxton, 5 Hove Park Villa, Hove, Sussex, England.

## A New Reader.

Dear Editor:

Welcome another reader to the fold. I am here. I have only three copies of *Astounding* to date but there'll be more, the good fates being kind. In the February issue you inquire if your readers have introduced the magazine to any new readers. Well, one of them has. You may thank my very good friend, Arthur Widner of Quincy, that I am reading *Astounding*. He continually painted your magazine in such glowing words of praise that when the February issue came into Canada I bought it. Since then I have procured December's copy and also March's.

Yes, *Astounding Stories* is a wow! One hundred and sixty pages neatly printed, trimmed edges, all my favorite authors, plus a few more, and lastly but in these times not least, only twenty cents per copy! I am with you lock, stock, barrel, hook, line, and sinker now and forever more—I hope.

In the December issue you mentioned that you wanted our—the readers'—opinions on what stories we like. Here is my opinion:

*The Roaring Blot*: O. K. But I wish our author had let our leading man go down into "What-you-call-it" and then come up and tell what he saw—if anything.

*A Little Green Stone*: Haggard slipped, in my opinion.

*Redemption Cairn*: Weinbaum was good! This story was swell!

*Mad Robot*: I enjoyed it, but whether I will ever read it again or not I can't say. I think this was better than *Buried Moon*.

*Entropy*: Just the kind of yarn I like! And by Nat Schachner, too! Need more be said?

*The Drums*: Another Don Keltz story. A new setting for each story, eh? This one was good. I like this series. Keep 'em up.

So Weinbaum is dead—just when I was beginning to like him, too. I hope you have more of his stories for us.

About making *Astounding* semimonthly, don't do it! Familiarity breeds contempt, you know. If you wish to do anything just keep on improving the monthly. I compared the December, '35, and the February, '36, issues and trimming the edges sure helped the magazine a hundred per cent, and I don't mean maybe!

I don't suppose this will get printed in Brass Tacks but, whether it does or not, I'm going to write you more.—Leslie A. Crouch, Parry Sound, Ontario, Canada.



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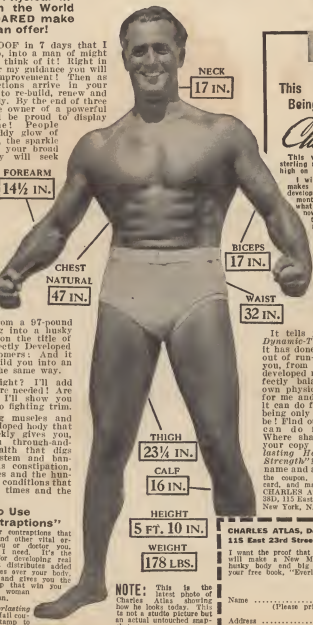
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NOTE: This is the latest photo of Charles Atlas showing how he looks today. This is not a studio picture but an actual untouched snapshot.

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